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CORRELATIONS AND CULTURE: A STUDY IN TECHNIQUE *

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GEOGRAPHY AND THE SOCIAL SCIENCES

MANY presidential addresses have been devoted to a survey of the progress made in one or another branch of our very varied discipline during the past twenty years. This is a safe and sane programme—but is not, I think, so likely to stimulate research as the unsafe, and, as some would say, insane attempt to forecast somewhat of the advancement of Science in our special field during the next twenty years. How can the experience of a geographer, based on the study of contours, isobars, isotherms and all the other isopleths, help us to obtain a more valid interpretation of that elusive concept which we call culture? In my address I propose first to consider the field of cultural geography; then to discuss a technique which I have found invaluable in research in that subject; and finally to suggest that modern education would do well to reduce greatly the study of certain fields of culture which were too strongly emphasised even in the Middle Ages, but which still occupy our young students to the exclusion of other more important aspects of culture.

I could talk for half an hour on the question of the field of geography and yet not make my meaning so intelligible as the impression you will gain from the study of Fig. 1 for a few minutes. The diagram suggests that the field of geography—the large circle—contains eight subdivisions which in turn are linked with eight major disciplines.[1] Thus geography links the four "environmental sciences" of Geology, Physics, Astronomy, Botany, with the four "human sciences" of History, Anthropology, Sociology and Economics. There are vast uncharted areas on the borders of regional geography—the core of our discipline—which merge into the eight subjects specified. Among professional geographers the

* Presidential Address to Section E (Geography) of the British Association at Cambridge, August 1938 (abridged).

great majority will always carry on the vital work in the central fields—but we may always hope for Raleighs, Drakes, Hawkinses and Dampiers who will explore far afield and extend our realms. They will perchance trespass on other empires ; and doubtless some conservative historians and anthropologists will call them buccaneers or pirates. Dropping metaphor, I firmly believe that by applying techniques learnt in the realms of geography, biology and geology, and carried across to anthropology, history and sociology, such pioneers will ultimately earn the respect of the leaders in the " purer " social sciences. But I must caution any piratical young geographer who cruises in strange waters that his reward, if any, will probably be a posthumous one.

FIG. 1. The liaison character of Geography, using " Environmental " Sciences to explain Social Sciences. The map of the continents suggests the ecological character of Geography.

It seems advisable to consider for a moment definitions of the fields of geography. Like many other geographers, I have put forth my own definition, and it runs somewhat as follows : " Geography is concerned with description, localisation and explanation of the data which relate man to his material environment." As I see it, the essential feature is the *localisation* (*i.e.* charting of the data in question) with a view to explaining their distribution. In a word we should make maps not solely as an end in themselves, but with a view to *explaining* the phenomena in question.

GEOGRAPHY AND HISTORY

Let us now consider how the techniques of geography and allied sciences can be usefully employed in helping the social sciences. There are, of course, many ways in which charting data is helpful to the historian or anthropologist, but curiously enough many workers in the sister disciplines are extremely sceptical of the value of such a technique. I am reminded of a recent congress of historians in which I heard one of the chief speakers hold up to ridicule the idea that certain historical sequences in Scotland could be correlated with the Old Red Sandstone. To the present writer

nothing is more likely than that such a relation existed ; and indeed I propose to show one or two examples of the same type.

The first example is taken from the finest collection of *liaison* studies in English with which I am acquainted. Here the various periods of English history are treated as separate stages of growth, in each of which the effect of the environment on man is shown to be as important as it is to-day. I refer to the *Historical Geography of Britain*, edited by H. C. Darby. Here is history of an unusually valuable type ; and it is food for thought that the authors are, so far as I know, all geographers. Is it going too far to say that most historians have felt so little need to study physical correlations that such a work could not be presented by them ?

No historian would deny the vast importance of the wool trade in the fourteenth century. We owe to Dr. Pelham a map of the Sussex Weald (Fig. 2) which shows clearly how closely this trade depended on a geological condition — the outcrop of the Cretaceous Chalk. I do not assert that this is the most vital feature of the wool trade in this period ; but it did determine the site, which no historian can ignore.

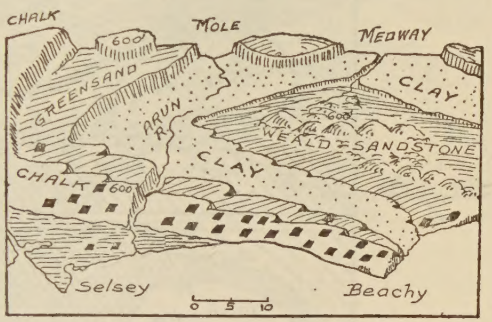

FIG. 2. The wool industry in Sussex about 1350, determined by the Chalk Cuesta of the South Downs. The black squares represent from 500 to 1000 sheep in a parish. (Based on R. A. Pelham.)

Another example from America explains a peculiar and characteristic culture-complex in the State of Kentucky. Every one has heard of the Blue Grass Country around Lexington and its association with horses and racing. It is rather sharply marked off from neighbouring areas, and its site is exactly determined by the geological structure (Fig. 3). The Blue Grass Region is an " eroded dome " much like the Weald. Here the fertile Trenton formation (of Upper Ordovician age) is surrounded by rather sterile Carboniferous rocks. A similar eroded dome surrounds Nashville in the south. In Fig. 3 I show the close correlation between the Ordovician beds and the density of horses in these regions of Kentucky and Tennessee.[2] Such comparisons show how the geographer can help the historian to elucidate culture in almost any district in which he may be interested.

Few students seem to have made use of graphical methods in investigating their historical problems. These are, of course, the chief characteristic of geographical research. Especially is this true in regard to the use of *isopleths* (lines of equal abundance), which can be applied to cultural facts almost as readily as to such

features as temperature or elevation. In Fig. 4 a number of isopleths illustrating the spread of the Renaissance are charted.

In diagram I, some of the chief teachers of Renaissance ideas about 1350, such as Petrarch and Boccaccio, are localised. Later writers dealing with the "life of the times in living languages" (a phrase which in part describes the Renaissance) were Wyclif, Froissart and Chaucer. Hence toward the end of the fourteenth century we see the new ideas moving north up the "Way of Light." In diagram II, I have stressed the *spread of printing* as perhaps the most characteristic feature of the second period of the Renaissance (1450 to 1550). Modern research (by J. H. Hessels and others) seems to refer the invention of movable type to Costar of Haarlem about 1446. It had spread to Mainz and the vicinity by 1460,

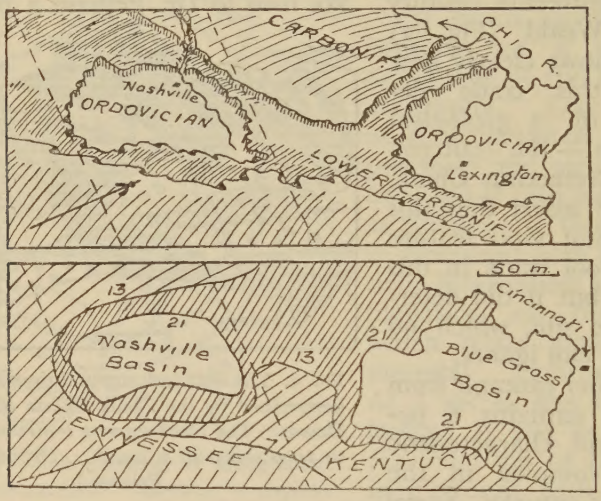

FIG. 3. Correlations between Geology (eroded domes) and horse-breeding in U.S.A. Figures indicate approximately "horses per square mile."

moving along the "Rhine Way," and reached Rome by 1465 and Paris by 1470. We have here an interesting example of a culture spreading along a new route far removed from the familiar "Way of Light." Other isopleths showing the rapid spread of printing throughout western Europe by 1480 are also charted.

In the third diagram of Fig. 4, I have plotted the "schools" of the famous teachers in the third period of the Renaissance (1550 to 1650). Here I have not attempted to draw isopleths; but when I labelled each teacher as concerned either with science or letters, it was surprising to find that practically all the former were to be found in the eastern portion of the map, and all the latter in the western part. This is an interesting distribution which is in part no doubt associated with the leading religions of the two areas. The conservative west held by the old Catholic faith for the most part,

while the eastern region was that where the reformed religion had the chief control. This distinction in turn is of course bound up with the deep-seated inheritance of Roman culture in France and Italy, which was wanting east of the Rhine. The votaries of mediaeval science were not encouraged by the orthodox Roman Catholic Church, so that naturally they were not numerous in the western part of diagram III.

In the social sciences we are dealing with disciplines of an intermediate character. In much of their content they are not so susceptible to rigorous proof as are many of the problems in the

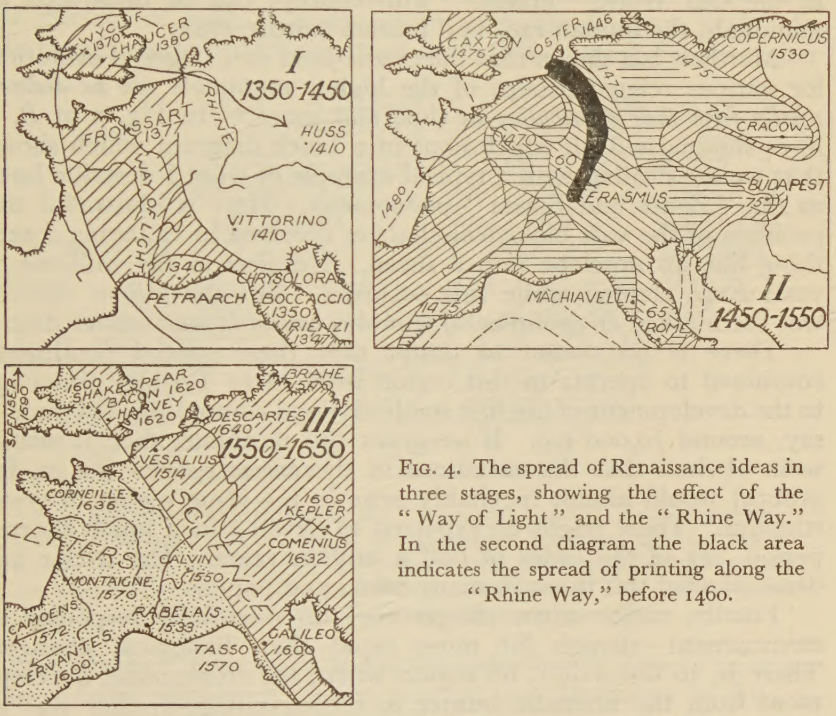

FIG. 4. The spread of Renaissance ideas in three stages, showing the effect of the "Way of Light" and the "Rhine Way." In the second diagram the black area indicates the spread of printing along the "Rhine Way," before 1460.

physical sciences, and in this they resemble the humanities. But like the latter, they have the great educational advantage that they deal definitely with *man* rather than with lower forms of life or with physical phenomena. A disadvantage inherent in geography and allied subjects is the immense number of *facts* whose assimilation would seem necessary to the study. This is wearisome in a scheme making for an all-round education, and in my opinion *memorising facts* should never be the vital factor in geography. Students of cultural geography should learn to "doubt and deduce" rather than to memorise innumerable facts often presented without co-ordination. It is this training in deduction, accompanied by a healthy scepticism of orthodox dogmas until they have been tested and confirmed, which should be our aim.

Evolution of Life and Culture

To the geographer interested in culture spreads, it seems likely that one outstanding fact has often been neglected by sociologists. It should be clear that as long as man was controlled primarily by the same factors as the higher mammals his evolution was likely to proceed along somewhat similar lines. We shall find in many fields of research that we are dealing with the same phenomena, *i.e.* with progressive stages of evolution developing in the Old World "cradle." This concept can be illustrated in mammals, the human race and human culture alike.

Matthew has shown that the cradle-land and stages of evolution for various related groups of the higher mammals *can be deduced wholly from their distribution* in time and space.[3] In Fig. 5 at *B*, I have summarised his conclusions in a block diagram which shows that we are dealing with a typical example of what I describe later as the "Zones and Strata" phenomena. Here is illustrated the problem of the vast biological changes involved in changing something like an antelope into a sheep. Needless to say millions of years have elapsed while this occurred. But the salient control was the marked environmental stimulus *centred in south-central Asia.*

There is no reason to doubt that these special conditions continued to operate in this region from early Tertiary times up to the development of the first stable civilised communities of man—say, around 10,000 B.C. If we grant this postulate, then it would seem obvious that the variations in the *human* species (*i.e.* racial groups) would almost inevitably arise in the same region of great stimulus. These might be expected to develop in a much shorter period, say of the order of half a million years. The writer has demonstrated this thesis in many books and papers.

Finally, major *culture changes* are also essentially responses to environment—though far more rapid than biological changes. There is, to the writer, no region where the tremendous development from the nomadic hunter to settled village-dweller was so likely to occur as in south-central Asia. I pointed out this inherent geographical advantage nearly twenty years ago ; and since that time I have watched the students of culture driven from Egypt to Mesopotamia, and finally to some still indefinite region to the north, in their efforts to find the cradle of civilisation. I shall return to this aspect of the subject later.

Thus we arrive at the interesting result that major racial evolution and major cultural evolution occurred in much the same region ; in spite of the fact—often pointed out—that there is no inherent connection between a given race and a culture associated with it. The time factor is very different in the two phenomena. In the field of Race, during the short period of the recent centuries, we have seen the origin of only a few hybrid groups, all unim-

portant except perhaps for the mestizos of Latin America. But we have observed new cultures travel all over the world, their speed of expansion increasing with every passing year. Thus tobacco-smoking spread far and wide within a century after Raleigh brought it to Europe. Nowadays the son of the head-hunting Papuan delights to drive a motor launch, and the second generation from the cannibal Fijian is filling the medical services of those tropic isles.

General Discussion of the Zones and Strata Theory

It was his use (on world maps) of the isopleth method in charting the criteria of race, in conjunction with the findings in W. D. Matthew's memoir " Climate and Evolution," which led the writer

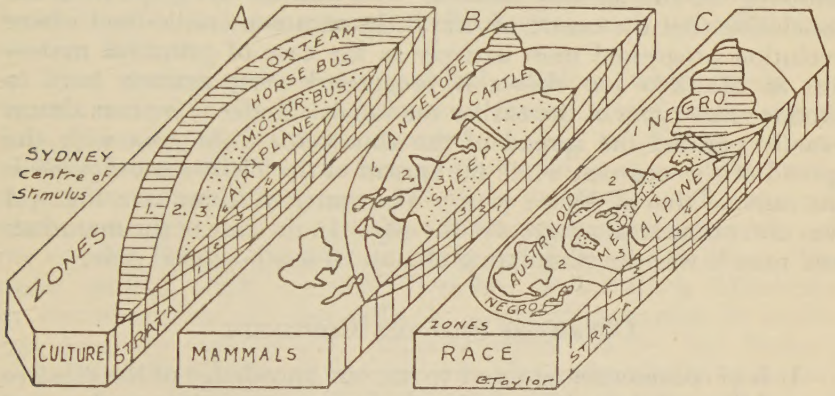

Fig. 5. Block diagrams illustrating the " Zones and Strata " Concept applied to Culture (Evolution of Transport), the Even-toed Mammals, and the Major Races. In each case the centre of evolution is in the centre of the zones, and the most primitive types have been thrust to the margins. The strata appear on the vertical edges (at right). All much generalised.

to publish the " Zones and Strata Classification of Races " in 1919. The general principles of this concept are illustrated in Fig. 5. Here three parallel cases of evolution are considered. All anthropologists will agree as to the explanation of the block diagram on the left. Here we see zones of *Methods of Transport* (ox-team, horse-bus, motor-car and aeroplane) arranged round the city of Sydney, the only settlement of note for sixty years in Australia. The "strata" resulting from this evolution in Sydney and gradual migration to the margin are indicated on the vertical edge of the block diagram. Clearly there is a common cradle-land, where commercial activity is greatest in the centre of the zones, and the primitive types now occur precisely where they did *not* originate.

Turning to Fig. 5 *B*, we find the same process illustrated in the evolution of the even-toed mammals. The antelopes are the earliest and are displaced farthest from the centre. The sheep are latest

and still characterise the common cradle-land. The fossil strata are in accord, using the palaeontologist's " Law of Superposition." No biologist doubts that the zones and strata in the case of these mammals indicate their order of migration and of *evolution.*

The writer believes that primitive man was differentiated into the five major races long before the later races reached western Europe. This evolution almost certainly took place in Asia and occurred before the last Ice Age. It certainly far antedated early Neolithic times. Hence early man of such a primitive type can surely be considered as obeying the same laws of migration as the higher mammals. If now the pre-Columbian distribution of the major races (Negro, Mediterranean and Alpine) be plotted in a block diagram (Fig. 5 *C*), we find a series of *zones and strata* closely resembling the two already charted. It is difficult to escape from the conclusion that the centre of Asia is the common cradle-land where evolution progressed most actively in the case of primitive man—just as Matthew has shown it progressed most actively here to produce new types of the earlier mammals. Indeed, we can almost exactly parallel the spread of the rhinoceros from Asia with the spread of the negroes, while the spread of the Pleistocene *Equidae* is the same as that of Alpine man.[4] The centre of stimulus in Fig. 5 *A* was the commercial progress in the city. In the case of the mammals and man it was the stimulating climate of south-central Asia.

Corridors into the Continent

It is of considerable interest to use our knowledge of the relative accessibility of the other continents from central Asia and to see how the consequent migrations agree with the " Zones and Strata " hypothesis. Most anthropologists accept Asia as the cradle-land of the later (Alpine, Mediterranean and Australoid) races. If we are to assume that the earlier negroes or negritoes evolved in *Africa* we are faced with several cumbrous inconsistencies. Where did the negroes (and negritoes) of Melanesia and thereabouts come from? If Africa is suggested, the obvious reply is that it is far simpler to assume that both African and Melanesian negroes came from south Asia—*i.e.* the same centre of racial evolution as did the other races. Moreover, the " Zones and Strata " hypothesis leads us to believe (even if this be not actually proven) that primitive races persist in the marginal lands precisely where they did *not* evolve. The same arguments apply to the negritoes, and lead us to accept an Asiatic cradle-land.

What was the relation of Africa, Australasia and America to the Eurasian landmass during the later Ice Ages—when we may surely picture these earlier racial migrations as occurring? Surely something like this. The easiest of access was Africa, for only the Red Sea—probably much less of a barrier then—separated that region of deserts and savannas from the south Asiatic cradle-land.

Australasia was the next most accessible. During the Ice Ages no doubt the broad low area of Sunda Land with the almost dry Bali-Timor ridge led man to the large low " Sahul Land " and so to Australia. In the Interglacial period Sunda Land and Sahul Land were drowned as the result of the filling of the oceans by the melting ice caps. Hence we may postulate that Australia and Melanesia were, on the whole, much harder to reach than was Africa in those early days.

As regards America, all migrations must pass via north-east Siberia. In the Ice Ages this was covered with an ice cap which would definitely discourage migrations. During interglacials the Behring route might be quite feasible—and doubtless during such a period a few tribes of Australoids or kindred folks reached America. Possibly during the close of the Wurm Ice Age the Eskimo reached America while their congeners, late Palaeolithic man, were reaching western Europe.

Now, assuming these geographical relations, what should we expect to find ? Primitive man was thrust out of south-central Asia, primarily by climatic changes leading to greater cold or aridity, and would know nothing of the outlying areas. He would, no doubt, move off in several directions, to south, south-west and south-east, more or less equally. Thus the greater proportion of the earliest (Negro) migrations would inevitably reach Africa (the easier outlet), while a smaller number would reach Melanesia by circumventing the very difficult tangle of mountains in south-east Asia and crossing the " stepping stones " of the East Indies ; and, if fortunate enough, making use of the alternately open and drowned corridors of Sunda and Sahul Lands. As millennia passed the more accessible lands of Africa would fill up and Australia would receive a much larger proportion of later (Australoid) migrations. Finally, as the latest migrants were thrust from Asia, the American corridor became available—and this is why we find so large a proportion of the last or Alpine-Mongolian race in the New World.

Scandinavian Climate

Let us now consider the environmental conditions in somewhat more detail. In the first place the migrations were probably extremely slow, and were made quite unwittingly by the primitive peoples concerned. They would all be hunters, preying on wild animals or upon wild fruits and grains. With the onset of any Ice Age, the forests, steppes and tundras move slowly but *en masse* to the south. A fall of temperature of 12° F. is the maximum effect. This temperature range, by the ordinary ratio explained in any text-book of climatology,* is normally equivalent to a journey of some eight hundred miles toward the Pole. Such a migration of vegetation would perhaps change half the Siberian forest into tundra,

* Off China the world isotherms change 1° F. for about 1 degree of latitude.

and the whole central Asiatic desert belt into steppe, while much of the southern forest belt would gradually turn into desert.

Research in Scandinavia has made it much easier for us to reconstruct the movement of ice caps, vegetation zones, and of man himself. In block diagram *B* (Fig. 6), we see that the ice-front has retreated northward half way along the Swedish Peninsula. This is dated about 9000 B.C. At that time the peat bogs in Germany show remains of fir trees, and here also we find the artefacts of Neolithic man. Apparently Palaeolithic man found the tundra and steppe very unattractive and so never settled on the Baltic. The next diagram, *C*, shows us a further retreat during five thousand years. The fir now covers southern Scandinavia and oak trees

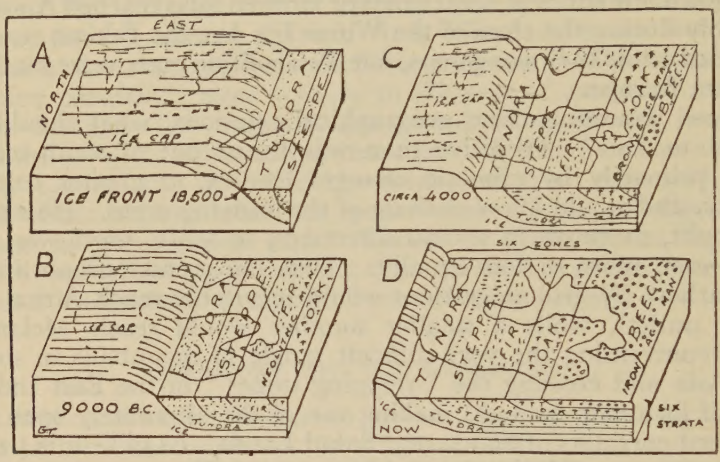

Fig. 6. Correlations of Climate and Culture, showing the northward march of the ice cap, the vegetation zones and primitive Man in Scandinavia since the close of the Wurm Ice Age. The front of each diagram shows the strata in section.

cover North Germany. Bronze tools are found in the bogs in the oak stratum, showing that a higher culture has moved north *with the ice retreat.* Finally, at the dawn of history, conditions were like those of to-day. The beech is now the dominant tree on the Baltic, and its advent was marked by the coming of Iron Age man. Here, then, we have a *dated* set of zones and strata, and we can be sure that similar movements of vegetation and man, northward and southward, accompanied every one of the Ice Ages throughout the Pleistocene.

I have devoted nearly twenty years to this " Migration-Zone " theory of racial evolution and classification ; and I mention it here primarily because it demonstrates that all the progressive nations of the world are built up of the same three stocks, Alpine, Nordic and Mediterranean. When this thesis is accepted, much of the evil structure based on " race prejudice " must fall to the

ground. This is a very encouraging idea, for cultural differences of language, education and religion can be entirely changed in a generation, whereas a real racial barrier is much more difficult to overcome. Thus the world must wait a long while for the negro problem, based on a real racial difference, to be solved ; but racial differences exactly like those separating Europeans, Japanese, Chinese, Indians, Polynesians and Amerinds have all been smoothed away in Europe itself ; where, in my opinion, their component stocks came into contact long ago in Neolithic times.

Relations of Culture and Race

One of the main results of a knowledge of cultural geography is a much clearer conception of the distinctions between race, nation, language and religion than most educated people possess. It can be well illustrated, as we shall see, by maps in connection with the spread of the Jewish people. Moreover, this study clearly defines the danger resulting from powerful political groups dabbling in sciences of which they are ignorant.

We are surely all agreed that the term *Aryan* can only be applied to *speech* ; and that *Nordic* indicates a " breed " and can only be applied to *race*. But few folks realise that the term " Jew " should only be used in connection with religion. It is much too common an experience to have to argue with folk, however influential, who insist on talking of a " Jewish race." We need a new term to express a group linked by purely *cultural* characters such as language or religion, and for such groups I have been extending the use of the word "*cult*." We should learn to speak of a " Jewish cult," since this large group is linked closely by religion and to a lesser degree by language. The Jews, like the Germans, are of two different races. If they come from Poland they belong to the Alpine race ; if from Spain they are of Mediterranean race, like all the original Jews of Palestine.

Since this problem illustrates very concretely the way in which the social sciences are vitally concerned in world politics, I will dwell on it briefly. It is illustrated in the two maps in Fig. 7. On the left we see the logical *linguistic* divisions in Europe, which are undoubtedly Aryan and Altaic. Here also is shown in black the realm of the German *nation*. In the right-hand map (Fig. 7) are the *race* divisions in Europe, *i.e.* Nordic, Alpine and Mediterranean. The German nation is half Nordic and half Alpine. The Jew belongs to a " cult," but the dominant Jews in Europe, including about three-quarters of the whole body, are broad-headed Alpines like the rest of the mid-European peoples. The most logical explanation is that the Polish Jews are the result of the widespread conversions carried on by the Jews in eastern Europe.

A year or two ago the German authorities were specifically excluding the German Jews as of " non-Aryan race." Of course

racially they are Alpines like the south Germans, and their language is best called Judeo-German. Anyone with a slight knowledge of German can understand the sentence *Es ist gar alles kein Neues nicht unter der Sunn.* Yet this is Yiddish, which is mostly a mediaeval German dialect learnt in the Rhineland.[5] It has a considerable addition of Hebrew words, in the same way that English includes much Latin, but English does not thereby become a Romance language. Nor does English change its Saxon character when it is written in Pitman's shorthand. The Semitic script used in Jewish newspapers disguises, but does not change, the essentially Aryan

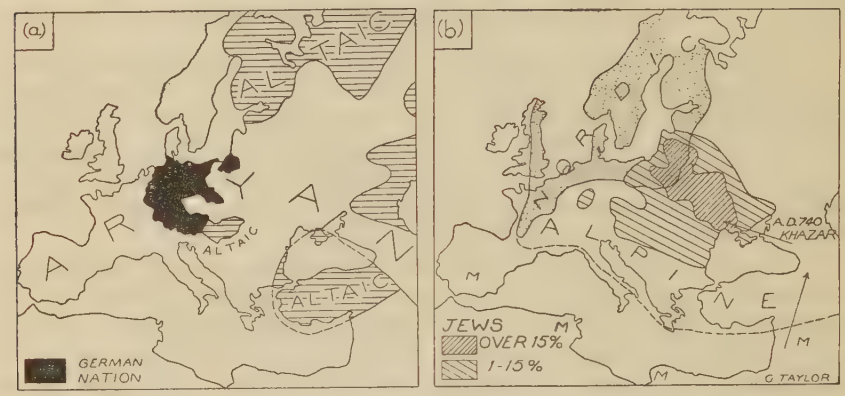

Fig. 7. (*a*) Map of Europe showing the distribution of Aryan and non-Aryan (*i.e.* Altaic) languages. The area of the German nation is also charted. (*b*) Map of Europe showing the distribution of the Nordic race (dotted), and of the folk who profess the Jewish religion. The Alpine and Mediterranean races (M) are also indicated. Western Britain and southern Italy are "Mediterranean" in race.

basis of Yiddish. Thus the accurate student of social science would describe the Jews *as a composite culture group* ("*cult*") *with a specific religion, most of whom are Alpine in race, and speak an Aryan language* (*a dialect of German*) *which is written in a peculiar script.*

General Ecological Approach to Problems in Culture

Let us see how ecology can help the study of the evolution of languages. The early settlers of New England came mainly from Suffolk and the adjacent south-east of England. They carried to America the pronunciations of early Stuart times, and some of these have changed considerably in England since their departure. In the fifteenth century words like *dark*, *far*, *farm*, *star*, etc., were spelled and sounded *derk*, *fer*, *ster*, etc. So also *clerk* and *new* were pronounced *clerk* and *noo* in this part of England. About the time of Elizabeth the pronunciations *clark* and *nioo* were growing in favour, and have since become universal in England.

The older forms were carried to America and survive in rustic New England. So also certain Elizabethan and Stuart ballads are perhaps better preserved in the isolated mountain hamlets of the

Appalachians than in most of England. Many old words have become archaic in England which are still in common use in much of America.[6] Here again, as we saw in race, the primitive is " pushed to the wall " far from the cradle-land. No one imagines that Shakespeare lived in the Appalachians because some of his language is now perhaps more common there than at Stratford ! But many philologists have thought that Sanskrit *originated* in Lithuania ; whereas Lithuanian is a *marginal* survival of an early Aryan akin to Sanskrit, thrust out from the common cradle-land in south-central Asia.

We may use as an illustration of the value of the " Zones and Strata " concept that complex of races and cultures which characterises the Indian and Pacific areas. It is quite obvious that every widespread characteristic in Polynesia has migrated from west to east, and that any cultural contacts with America can be completely ignored in a general study. If the data be examined for Easter Island, the furthest removed from Asia of these isolated groups, a culture sequence is demonstrable stretching across all this vast expanse (fourteen thousand miles). Two remarkable features in Easter Island are the well-known stone statues and the undeciphered script incised on wooden tablets. There is no reasonable doubt [7] that the statues, with their bird-man decorations, are of the same culture-complex as is common in the Solomon Islands some six thousand miles to the west. Hevesy and Hunter [8] are satisfied that the script, the only one used by Polynesians, is connected with the remarkable Mohenjo culture which flourished in the Indus region about 3000 B.C. It is true that objections have been raised [9] to the effect that the script was not understood by any living Polynesian, and that the tablets of mimosa wood, etc., are not likely to be many centuries old. But the present writer thinks that these objections are not very relevant. Our own alphabet is said to originate from not very similar signs used by miners in Sinai, though all the links are not yet clear. The question surely is to determine the origins of the remarkable Easter script —and to my mind the Mohenjo theory is plausible and indeed probable. Moreover, it offers a good illustration of clues which may be furnished by an ecological approach. So also a connection may be shown between five other culture " strata " in India and five culture " zones " extending into the Pacific.

Correlations in the Distributions of Languages

The evolution of nations is one of the most interesting and important problems engaging the attention of the social scientist. A common language is often the chief " cement " which links the various races and " cults " to form a nation. Hence languages merit our careful study. Few problems in Science are so difficult as those concerning the interrelations of the main language groups. Since here we have to do with an evolving complex arising in some-

thing like a cradle-land and affected by wide migrations, it seems likely that some light on the subject may be obtained by charting the data in the form of the " Zones and Strata " technique.

Before Aryan scholars yield to despair because the foundations of Aryan are " wrop in mystery," a promising field would be to explore Dravidian or Altaic for the ancestors of Aryan. For instance, there are three possible explanations for the accepted resemblances of Finn to Teutonic. The usual one is that Finn borrowed from Teutonic. But it is also possible that Teutonic has borrowed from Finn. A third view worth considering is that border (*e.g.* primitive) languages like Keltic or Teutonic still retain speech characteristics which have been carried over from the more primitive speech (now preserved as a *marginal* language zone) from which the Aryan group as a whole evolved. On this view the features common to German and Finn may be an inheritance from the common mother-tongue of Aryan and Altaic.

The lesson to be derived from the " Zones and Strata " technique is that marginal languages should be compared with each other. This means that *far distant* speeches may be well worth comparing. From this point of view, we should actually expect that Basque would resemble some Amerind language ; that Gaelic would resemble Pharaoh's tongue ; and that early Sinitic, early Altaic and early Dravidian should be studied to learn something about Proto-Aryan. Thus the writer by no means despairs of the solution of the Aryan problem.

Ecological Notes on the Aryan Problem

We may use the stage-diagram to correlate our scanty knowledge as to the early wave-fronts of the Aryan languages. There are three fairly definite subdivisions of Aryan : the early Kentum or " K " speeches like Gaelic and Latin, the intermediate " P " languages like Welsh (with which we may associate Teutonic and Greek for convenience), and the later Satem languages like Slav and Indian.

Turning to Fig. 8 some idea of our knowledge of the language distribution in Sumerian times is given in the lowest map of the series. At this time Hamitic languages were used by the Pharaohs in Egypt, akin to those still spoken by the Berbers in the Atlas Mountains. Semitic languages characterised Arabia and Syria, as they still do. In Europe at this date there were racial allies of the present-day Hamitic-speakers—all of Mediterranean race—living in the western regions, who probably spoke Hamitic.[10] Central Europe was occupied by an early migration of Alpine " broadheads " of whose language we know nothing. It was almost certainly not Aryan, and something akin to " Basque " seems most likely. In view of the important corridor linking Turkestan with China by way of the Tarim Basin, I have ventured

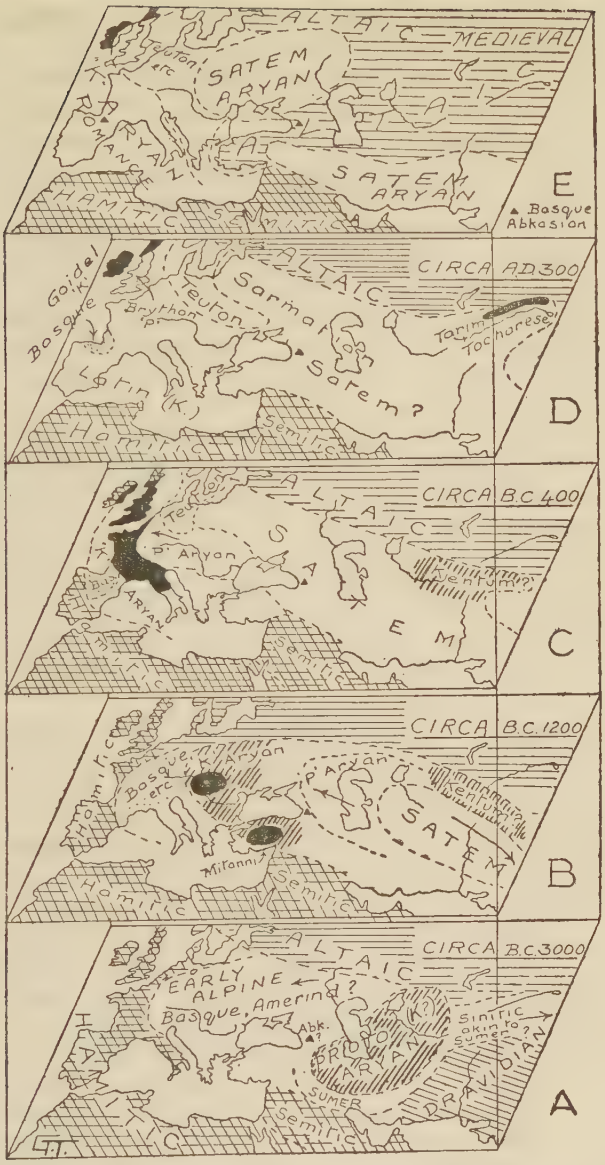

FIG. 8. Stage-diagram giving a tentative reconstruction of the distribution of European languages at various epochs. Black areas are the primitive (marginal) "*K*" *Aryan* languages. It is suggested that the early Mediterranean race spoke *Hamitic*, and that the early Alpines spoke languages akin to *Basque*, *Abkasian* (and *Amerind?*). Aryan developed near the Caspian Sea and spread out in waves. The outer "ripple" (*K*) was akin to *Gaelic*; the second (*P*) akin to Welsh. The latest type was the *Satem* group.

to suggest that a linguistic kinship between early Chinese (Sinitic) and Sumerian or early Aryan is only to be expected.

In the second map (Fig. 8 *B*), for the period around 1200 B.C., we are on surer ground. Vast migrations of "Satem"-speakers had poured into India from Turkestan. The Hittites, who seem to have spoken an Aryan tongue somewhat akin to the Kentum group, were in control of Anatolia. Semitic was now the chief language of Egypt and Mesopotamia. In central Europe (if we adopt the suggestions of H. Peake), Kentum languages were spoken in the regions east of the Alps, while Brythonic (one of the intermediate "P" type) was that used by the Kimmerians of the Ukraine and Caucasus areas. It seems logical to assume that many Satem-speakers still remained in Turkestan and were perhaps allied to the Sarmatian tribes.

In the next map (400 B.C.) we see the first great Aryan conquest in the Near East, that of the Persians. They spoke a Satem language, and it is probable that their Sarmatian kin were occupying the European steppes about this time. The latter may have been the ancestors of the Slavs, who already seem to have settled in the Vistula Basin. Meanwhile the marginal K-speakers (Gaelic, etc.) had reached Britain and Ireland, and still occupied parts of France. The distribution of place-names in central and western Europe clearly shows the migration of waves of Gaelic and Welsh speakers across much of these areas.

The conditions some seven centuries later (A.D. 300) are shown in the next map, which deals with Europe during the zenith of the Roman Empire. The marginal primitive Aryan language, Latin, had been carried far and wide ; so that it later gave rise to Italian, French and the other Romance tongues—which are clearly offshoots of the "K" group of Aryan. Brythonic (Welsh) was spoken in England, south Scotland and Wales at this time, and probably in parts of the continent beside Brittany. Possibly some Hamitic dialects still persisted in the Scottish Highlands, as suggested by some of the Ogam inscriptions. Gaelic, a "K" language, was spoken in Ireland and in most of northern Scotland.

The mediaeval distribution of languages, and of the three subdivisions of Aryan, is shown in the top map. To-day Gaelic is almost the sole representative of a little-altered primitive Aryan speech—though the much-evolved derivatives of primitive Latin are still very important languages.[11] Hamitic has died out in Europe. Altaic has encroached in Hungary and Finland, and displaced Hittite and Greek in Anatolia. Semitic has driven out Hamitic in much of North Africa. "Satem" Aryan, in the form of Russian, is in turn displacing Altaic throughout much of the U.S.S.R.

The conclusion to be drawn from this tentative geographical approach to the Aryan problem is that the waves of language have spread from Turkestan towards India, Persia and Europe. There

seems to be no support for the origin of Aryan in the German or Lithuanian regions, a theory which has been strongly upheld by a number of notable continental philologists.

The Race of the Early Aryan Speakers

Let us turn to another aspect of the Aryan problem. What race first spoke the Aryan languages? To-day Aryan is spoken by Alpines in central Europe, by Nordics in the north and Mediterraneans in the south. There can be little doubt that originally these dissimilar races "despised" each other as bitterly as any pair of ignorant and opposed "cults" do to-day. It seems logical to assume that each of the three original races at first had a somewhat distinct culture, including language. How can we advance our knowledge of their early linguistic history? There are several techniques in use. The oldest method is to study the syntax and etymology of related languages and learn, from their many variations, which was the original. Unfortunately, for many years this technique was fatally hampered by the idea that language "decayed" by losing inflections—whereas this phenomenon is one of the clearest signs of evolution. However, there can be little doubt that the unwieldy "K" languages of the western margin are closer to the original Aryan than the Satem languages of the centre and east of the Aryan realm.

Let us use an ecological approach. If we plot these languages on the map, it seems highly likely that the Mediterranean folk of south and west Europe spoke Hamitic, or its derivative Semitic, before they were conquered by Aryan speakers. The research of Rhys and Jones [12] makes this entirely probable as regards Gaelic and Welsh. But our chief interest is concerning the original speech of the Nordics. It is usually taken for granted that they spoke Aryan, and of a type not far from Proto-German! I do not know any reason for this belief except the volubility of the high priests of the Nordic fetish. We have seen that it is possible that the marginal European of the south-west originally spoke Hamitic. Let us apply the same reasoning on the northern margin of the Aryan realm. Here dwell the Nordics—and it is very important to remember that many of the Finns are Nordic, as are some of the northern Asiatic peoples such as the Ostiaks of the Yenisei. These Finns and Ostiaks speak Altaic. Applying our general Ecological Law of Linguistics, we should expect that some marginal languages (*i.e.* Altaic) have been replaced by later languages (Aryan) migrating from the cultural cradle.

It is very significant that some of the characteristic features of the *Teutonic* group of Aryan remind one of similar features in the speech of the Finns and Ostiaks. For instance, "strong" verbs like those of German are quite common in Ostiak. There is, therefore, some support for the suggestion that the Nordic folk of Germany

and Scandinavia originally spoke an Altaic language : and only relatively lately in linguistic history learnt an Aryan tongue. Indeed, there seems little doubt that the earliest-known Nordics of central Sweden, like those of Finland, spoke Finn, not Teutonic. This speculation as to the ancestral tongue of the " Blonde Overlords " is not likely to be acceptable in Teutonic circles.

The Basque problem has intrigued philologists for a century. The language is quite different from Aryan, but has some slight affinity with three distinct groups, Abkasian in the Caucasus, Altaic and certain Amerind tongues (Fig. 8). So far as I know no one but myself has suggested any satisfactory reason for the relation between Basque and Amerind. Yet if we study the zones and strata of Europe there is one curious feature. Peake, in *The Bronze Age*, has suggested that the earliest Aryan tongues reached central Europe from Asia by way of tribes of *Alpine* race about 1500 B.C. But there were folk of Alpine race in Europe for some four millennia before this period, for instance all the Danubian peoples who moved across Europe in the third millennium B.C., and many still earlier. What did they speak ? Look further afield to the other side of the Old World. At this date—say the sixth to the third millennia B.C.—it is generally believed that hordes of Amerinds were pouring into North America from central and east Asia. As I showed in 1919 they were of much the same race as the Alpines entering Europe. I suggest that the Pre-Gaelic Alpine invaders of Europe were members of the same linguistic zone and spoke Basque. Later, Europe was invaded by the last-evolved group in the cradle-land who spoke Aryan. These " Wiros " transferred their languages to almost all the other tribes in Europe, excluding the Basques and Finns. In the rugged valleys of the Caucasus, relics of Pre-Aryan language such as Abkasian seem to have survived. In its syntax it resembles both Basque and many Amerind tongues.

Following the principle of " doubt and deduce," I venture to sow many seeds of linguistic heresy which I hope will prove fertile in the minds of some young researchers. Let us consider the typical marginal languages of Europe, Gaelic and Welsh. It seems to be generally believed that these have always been spoken by the dark highlanders and their allies of Mediterranean race in Wales and Ireland. A great deal of natural pride is based on belief in this age-long association. But our " Zones and Strata " theory suggests that these marginal peoples only recently learnt these languages from entirely different races. The writer believes that Hamitic speech akin to the language of the Pharaohs was spoken in most parts of Britain while the Greeks were learning Homer. The Berbers, Tauregs and still more marginal folk of North Africa are of the same race and preserve their old speech without change (Fig. 8). It is to be hoped that Berber will not be prescribed for the unfortunate youngsters in Eire as the result of this address !

Few developments in world history are more remarkable than

the spread of the Romance languages which are, of course, *largely* based on Latin. It is well to realise that Latin is one of the most marginal, and therefore one of the most primitive, of Aryan tongues. Jespersen pointed this out many decades ago, but there is such a halo around Latin that it has not yet become generally known.[13] Many philologists still maintain that the striking change from Latin to French and from Anglo-Saxon to English is one of " decay." They would seem to deplore the loss of the cumbrous and countless inflections. A study of language distribution would show them that the languages still more marginal than Latin have an even larger development of inflections. For instance, they are peculiarly abundant in Australian aboriginal speech and in West African languages ! I venture to predict that the philologists will soon accept the following general ecological and cultural " law " : Marginal languages are primitive, and characterised by cumbrous inflections ; they evolve by loss of inflections and by the development of an analytical character. This gradual change is illustrated by the concentric zones of actual languages.

Determinism *versus* Possibilism

During the twentieth century the trend of geography has been away from the belief of Ritter in *Providential* control, and from *Environmental* control as expounded by Ratzel, towards the *Possibilism* concept of Vidal de la Blache and his school. The latter geographers picture any particular region as offering almost innumerable possibilities of exploitation to Man. Our material evolution, in their opinion, is essentially a matter of our own choice, depending on which of the possibilities *we* choose. I have come to a different conclusion, no doubt primarily owing to my experience in pioneer countries like Australia and Canada, where the possibilities offered by Nature to Man are more meagre than in Britain or the U.S.A. Indeed of these three schools, which we may label the Theocratic, the Geocratic and the " We "-ocratic, I definitely belong to the second. And I propose to illustrate, by the correlative method, that man is not really a free agent but definitely a product of his environment.

The stage-diagram (Fig. 9) may help to explain how this idea of " choice of possibilities " has arisen. It is true that in southern Ontario we have seen man at first dependent chiefly on fur, then on lumber, then on farming, hydro-electric power and mining. But all these in turn depend on Nature's bounty, and, given sufficient knowledge, could be predicted as the inevitable development of an expanding nation in the given environment.

In the lowest stage in Fig. 9, we see a generalised economic map about 1750, showing that fish, farms and fur had expanded to the limits approximately there shown. Some sixty years later, by 1810, farming had spread approximately to Detroit ; while

Mackenzie was exploiting for furs the river-basin named after him. By 1870, mining was becoming of some importance, and gold, silver and iron mines were being exploited both near the St. Lawrence and on the Fraser river. Still more important, Selkirk had, over fifty years earlier, settled his isolated band of farmers on the silts of Lake Agassiz in the heart of the continent. About 1880 the modern migration to the wheat-fields of the prairies began. In the last and uppermost stage we see in a generalised fashion the conditions to-day. The whole north of the Dominion is being exploited not only for furs but for metal mines; the latter in part by air transport. Agriculture has covered most of the inland prairies, and will extend north and into the Clay Belt. Manufactures have spread along the St. Lawrence from Montreal to Ottawa and Windsor, in large part owing to the bountiful water power.

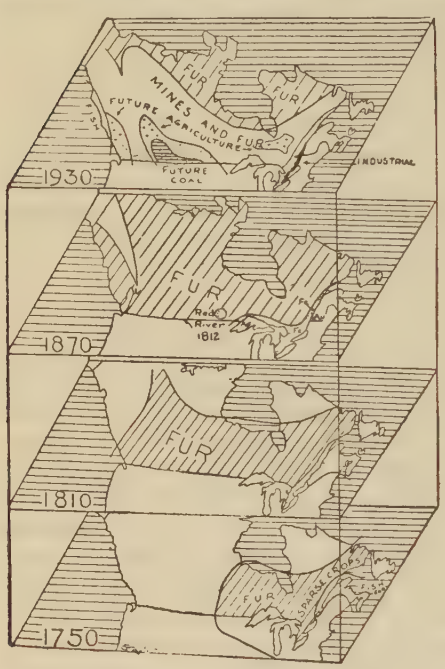

Fig. 9. Stage-diagram of industrial development in Canada from 1750 to 1930. It supports a deterministic attitude towards man's occupation of a country.

But while there have been these striking advances and changes in the type of industry, man has not really been a free agent. His advance from fur-hunting to wheat-growing is only possible where rain and sun and soil are satisfactory. *All* the fur country cannot be utilised for wheat, even if man so wishes. We shall never see hydro-electric power or coalfields leading to the development of factories in that half of the southern continent known as "Empty Australia," however much man may wish to replace the sparsest of pastoral occupation by better-paying industries. On the other hand, it seems clear to the writer that in the future the immense coal resources of Alberta must inevitably be utilised, as the more accessible coalfields are used up elsewhere. Man may very probably some day "choose," as the "Possibilist" school would say, to give up ranching in the drier parts of Alberta and turn to manufacturing based on the almost inexhaustible coal. But he is none the less controlled by his environment.

Exaggerating somewhat, I feel that Man's part in the programme of a country's evolution is not unlike that of a traffic policeman.

He can accelerate, slow or halt the traffic, but he does not alter its *direction*. This "Stop and Go Determinism" has no supporters among historians, and not many even among geographers. But it expresses something of the conclusions that I have arrived at from my lengthy study of the difficult environments of Australia and Canada.

Culture in the Twentieth Century

As in all preceding ages education is still a battleground between conservatives and liberals, or, in less polite terms, between reactionaries and iconoclasts. Too often the reverend elders in charge of a nation's education forget that their chief purpose should be to train the *young* idea rather than to protect the literature of a bygone age. It is dangerous to attack vested interests, and in the field of culture, classical interests are still powerful in school and college. Since most cultured folk receive the main part of their education in the years between fourteen and twenty-two, it is vital to spend these precious years wisely. I do not believe that the curriculum in many of the schools in the British Empire—at any rate those with which I am familiar in Australia and Canada—is wisely chosen. It is because I feel that the social sciences, especially such topics as are discussed in this address, are far more important to the youth of this generation than is almost any other branch of culture, that I raise the somewhat trite issue of Classics *versus* Modernism. The youth of to-day has not time for both.

We have noted in our discussion that primitive ideas persist in marginal areas. Perhaps it should not surprise us, therefore, that in the two distant Dominions mentioned, classical teaching is given an undue place in schools and colleges! When St. Augustine reached Britain about A.D. 600 with a mission to educate the barbarians, he first found it necessary to establish grammar schools to teach the classical grammar. Not until students knew Latin could they begin to study the mathematics, logic, music, theology and rudimentary science of that day. Undoubtedly we are a conservative people; so that many folk seem to think that what was good enough for St. Augustine ought to be good enough for us!

This is perhaps the main reason why so many of our schools still give the lion's share of their time to the acquisition of an inadequate knowledge of the Latin language. Latin is, of course, of small importance in helping the average man to-day to pass on to other subjects which he really needs. Be it understood that the Latin and Greek languages should, in my opinion, most certainly be studied in the universities for the same reasons that we study Anglo-Saxon and other sources of our language, and to the same extent. There is no need to learn Greek to understand Greek philosophy.

Would that the classical protagonists realised the real value of

the Greek education as taught by Aristotle, and would encourage its adaptation to modern times. Plato and Aristotle in 350 B.C. did not occupy the invaluable time of their students by wearisome repetition of the vocabularies of the Egyptians, from whom the Greeks derived much of their culture ; or of the folk-tales written in some foreign language two thousand years before their date. *They trained youth to deal intelligently with existing conditions.* We may not all agree with the scathing words of a well-known writer (E. D. Martin), who states that culture did not mean for the Greeks " the accumulation of dead and inconsequential knowledge, the only purpose of which was a pedantic display of erudition " ; but we *must* suit our education to the twentieth century.

We must train our young folk to deal intelligently (*i.e.* scientifically) with existing conditions. It will be of interest to draw from my own teaching experience in this connection in Australia, Chicago and Canada. In the former continent we see six million Anglo-Saxons living in a hot arid continent with an environment resembling North Africa and quite unlike any portion of Europe, not to mention the British Isles. Bordering the Commonwealth on the north are three hundred million Indians, four hundred million Chinese and sixty million Japanese. Yet it is safe to say that the students in the better schools, as I knew them in Sydney, learned little or nothing of these environments or of their effect on the inhabitants ; or about the huge over-populated areas to the north, menacing the Australian Commonwealth. Conditions of matriculation meant that they spent one-fifth of their time in schools studying classical languages—though only a few per cent. would ever use this subject at the university or in later life.

In Ontario I find that conditions are not much better. Here also we have a pioneer country, with the welfare of the citizens far more directly controlled by the natural environment than in older regions like Britain. Here also in my opinion we have too great a stress laid on the classics in the *general* education. The schools here as elsewhere are controlled by matriculation conditions. It is perhaps sufficient to compare some of the social sciences with classics at the University of Toronto.* There are twenty professors (assistant or higher) in classics, while the total for the independent and newer departments of Sociology, Psychology, Anthropology, Archaeology and Geography is only sixteen. The number of students in the second group is of course far greater. On the other hand at Chicago—one of the three leading universities in the States —Geography is, as regards both students and staff, on an equal footing with classics ; and throughout most of the U.S.A. the legend that culture is impossible without classics is nearly dead. I hope and believe that education in this respect is better planned in Britain than in the Dominions.

There is something very wrong with the world to-day. Our

* Professors in classics are still appointed by the affiliated Colleges themselves.

outlook on life is confused whether we are concerned with material, mental or spiritual values. As Lord Samuel has recently pointed out, *Science* in modern times can be trusted to look after material things, but philosophy and religion are still in the melting-pot. In his opinion, that frontier *where science and philosophy meet*, and where the conclusions of one are handed across to be the premises of the other, should be taken as the vital centre in the wide realm of thought. To my way of thinking this explains the value of a study of cultural geography. It is a fair example of such a transfer of concepts from science to a somewhat philosophical field.

What should be the training of the educated man to-day? If we omit the specialised knowledge he needs for his profession, then we might do worse than adopt Aristotle's idea, "To deal in the best way possible (*i.e.* scientifically) with existing conditions." Let us replace the bygone *Trivium* of grammar, rhetoric and dialectic by one in sympathy with modern aims. I like Wells' summary in this connection. "The end and aim of all education is to teach . . . of the beginnings of life upon this lonely little planet, and how these beginnings have unfolded; to show how man has arisen through the long ages from amidst the beasts, and the nature of the struggle God wages through him." In effect, to make folks realise that evolution is still progressing, and that *they themselves are living factors in the process.*

Three subjects seem to be vital in the scheme of education outlined above. First *Biology*, which deals with the evolution of man as an animal; secondly *History*, which deals largely with the growth of his ideals and institutions; and thirdly *Geography*, which deals with his present, often varying, environment. This to my mind is the ultimate reason why Geography can be claimed as one of the three fundamentals of modern education. I should like to see Wells' *Outline of History*, or some similar generalised study of cultural evolution, made compulsory for all high-schools. A knowledge of this aspect of culture will be far more helpful in the present world-crisis than much of the present curriculum.

The aim of civilisation, as I see it, is not to prepare for a better world *beyond* this earth, but to prepare a better world *on* this earth. Our immediate objective should be a world of peace. This can only be attained by studying world problems, especially those involving other nations and cultures. It would seem desirable to swing the attention of youth for a generation or two from the problems of physical science to the more difficult and dangerous problems of social science. There is no risk to-day in stating that the earth is a globe, revolves round the sun, and is of infinitely small importance in the cosmos. But there is grave danger in many circles in stating the truth about Communism, Socialism, Judaism, Nordicism and many other -isms which conflict with established or dictatorial interests. These creeds are cultural facts, and it is no quibble to say that they are to-day more vital to the

man of culture (*i.e.* with a well-rounded education) than is the well-recognised and valuable culture based on art, music or classics. Thus the geographer whose interests lie not only in the economic but also in the *cultural* field can feel that he is working right on the battle-front in man's progress towards a higher type of civilisation.

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THE ORIGIN AND DEVELOPMENT OF DUNDEE : A STUDY IN HISTORICAL GEOGRAPHY

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" The situation of the town is very fine, the town itself is not so." In these words Queen Victoria gave her impressions of the place she had just reached from the Tay. Nearly three centuries earlier Alexander Wedderburne, the Town Clerk, had suggested a reply to this criticism of the " town itself." On the fly-leaf of Dundee's Lockit Book he wrote, " If Reason showed rule in cities, it is better certainly for great souls to inhabit small houses than for mere slaves to lurk in magnificent mansions." The queen was neither the first nor the last to comment on the beauty of the site of Dundee. Viewed from the Tay or from Fife the town rises from the riverside, gradually to the west and east and more abruptly to the north, the buildings terraced row above row till they reach Balgay Hill, the heights of Craigie and the Law Hill. In the background lie the sheltering Sidlaws with Craigowl, their highest point, almost directly behind the Law and nearly five miles distant. To the east stretch the shipyard and the residential suburbs of Broughty Ferry and Monifieth, and to the west the Carse of Gowrie, known since Hardyng's time as " a plentifull countree, of corne and catell and all commodities."

The relationship of these physical features to the geological structure of the region has been treated adequately elsewhere,[1]

and a brief survey will suffice for the present study. The Sidlaws, dipping away to the north-west and falling in steep scarps to the south-east, are the northern base of a huge anticlinal fold which rose high above the present Firth of Tay. The Fife Hills are the southern base of the same arch. Presumably the Tay followed something like its present course across the Old Red Sandstone beds which buried the volcanic arch, and with the general degradation of the land ground its way through the sandstone and lava till it hollowed out the present wide valley. The main features were unaffected by glaciation. The Sidlaws emerged more rounded in outline and with their slopes and lower heights covered with boulder clay. But the Law Hill, a volcanic plug 571 feet high, is covered with glacial drift almost to the top of its north-western face, and there are glacial moraines of about the same height running in a direct east-west line about half-way between the Sidlaws and the northern bank of the Tay. Indeed the whole of the immediate hinterland of Dundee is fairly typical of heavily glaciated country. It is characterised by gentle undulations, occasional knolls—some of them perfect drumlins—and numerous little streams. The drainage is mainly to the Dighty, which follows a general west-east direction between morainic deposits and enters the Tay between Broughty Ferry and Barry Links. The glacial lakes, characteristic of this area as of Holderness, have largely disappeared, though one or two survive as links in Dundee's water supply.

One further land-form requires notice, namely, the raised beaches. The " sub-Arctic " spell which followed the final recession of the ice-cap eventually gave place to the " Boreal " climatic period with fairly dry conditions favourable to tree-growth, and this in turn was followed by the " Atlantic " period with greater rainfall. These changes in climate were accompanied by eustatic movements which resulted in the formation in the Tay of well-marked 25-foot raised beaches. The importance of these beaches in human geography has been noted by writers from Geikie onwards.[2] The Carse of Gowrie, one of the most prolific farming regions in Scotland, consists of peats of typical Boreal composition covered by estuarine clays. The same formation, lying among crags of Old Red Sandstone, was the foundation on which Dundee was originally built.[3] Finally, within recent historical times, the water-front has been straightened by the reclamation of alluvial flats from the Tay.

This very diversified geological structure is reflected in the nature and distribution of soils in the district. Within four or five miles examples of glacial, volcanic, alluvial and gravelly soils may be found. In the immediate vicinity of Dundee the soils have never been noted for their fertility. Except round the eastern end of Balgay hill and where alluvial deposits predominate they were generally poor. The Craigie district, for example, remained moorland till the middle of the eighteenth century.[4] But within

a radius of ten miles are found some of the finest soils in Scotland. Generally speaking, fertility seems to be highest where the soil contains both glacial and volcanic elements. Thus the soils round the volcanic outcrops north-east of Dundee, the red soils of Longforgan and the upper slopes of Longforgan and Fowlis are all known for their heavy crops and early harvests.

The climate is more genial than the latitude would suggest. The south-west—north-east trend of the Sidlaws is in direct line with the warmer south-westerly winds, but excludes the colder northerly winds; so the temperature varies from about 37° F. in January to 57° F. in July. By the time the south-west winds have crossed Scotland they have lost most of their moisture, and the rainfall is therefore low and the skies are relatively clear of heavy clouds. On the other hand the Firth of Tay feels the full blast of the east winds and the lower coastlands suffer from sea fogs, especially in late spring and early summer.[5] Neither of these, however, interferes greatly with the growing of fruits and cereals, which ripen successfully in the relatively dry late summer and early autumn.

The original settlement and steady expansion of certain towns can be explained by reference to geographical factors which have exerted a continuous influence. The "bridge-head" towns, the "funnel" towns, the "river-bend" towns and so forth, all fall into this group. Dundee does not. At any particular point of time certain geographical influences could be discerned, but their relative importance changed considerably as the settlement developed from a fishing village to a highly industrialised town. By the application of one of the methods of historical geography it is possible to attempt an analysis of these geographical influences, first in determining the original site, and later as affecting the town's career at different stages of its evolution. It is tempting to point to the Law Hill as the original determining factor, for the human importance of an isolated eminence in a lowland stretch needs no explanation. With this in mind the early etymologists interpreted the name "Dundee" as "hill" or "gift" "of God." Christopher Irvine, in his *Historiae Scotticae Nomenclatura*, suggests that the derivation is from "Donum Dei," the name given to the place by David, Earl of Huntingdon, who returned from the Holy War in the middle of the twelfth century, and after experiencing a severe storm in the North Sea derived great comfort from the sight of this hill. This explanation receives no modern support. As W. C. Mackenzie says, "the usual translation, 'the hill of God,' needs more imagination than I am capable of."[6] W. J. Watson interprets the name as from the Gaelic Dùn Dèagh "which seems to mean 'Fort of Daig(h)'."[7]

Nor does archaeology favour the "Law" theory. The oldest evidences of human occupation came from a kitchen-midden discovered about twelve feet below street level near the Stannergate,

which is on the riverside more than two miles south-east of the Law Hill. The midden contained remains of shell-fish and mammal bones, and at a considerably higher level were found Bronze Age relics.[8] Continuous occupation of the immediate hinterland, though not necessarily of the site of Dundee, is proved from the numerous archaeological discoveries. In contrast with the Grampians the region was relatively attractive. The land provided roe, red deer and wild cattle, and the river afforded fish, sea-fowl and seals. When trade began the furs and skins from the hinterland could be bartered against the products of higher civilisation in Gaul or England, for the early inhabitants of Angus were always one step behind their contemporaries further south. They were using bronze daggers and flat axes whilst their contemporaries in southern Scotland and in England were using winged axes and palstavs and rapiers.[9] The first farmers to settle in this part of Scotland were probably the Beaker Folk. They, too, would find much to attract them in the varied and often fertile soils.

So far the Law Hill had been a negligible factor. But some time during the Iron Age its crest was crowned with a fort, formed, according to some writers, of vitrified stones. As to whether it was actually vitrified, and whether it was still in existence in A.D. 834 when the Picts overcame Alpin and his Scots, we are not greatly concerned; for when the settlement of Dundee did eventually crystallise, it bore no traceable relation either to the Stannergate midden site or to the hill fort on the Law. "Dundee owes its origin," wrote Warden, "to its protected position on a bay in the Firth of Tay, and to the lofty rock which rose from the edge of the water, the remains of which are called Castle hill."[10]

This bay, or natural harbour, lay between Castle Rock on the east and St. Nicholas Craig on the west. These are to-day barely discernible, whilst the outline of the bay has been obscured by reclamation and harbour works, but the lay-out can be understood by reference to the map (Fig. 2). To the landward side the site was protected by two hills, Tenter's Hill and Corbie or Windmill Hill. As late as the eighteenth century the latter was crowned with a patent windmill which Bishop Pococke mistook for "the Moon in Eclypse."[11] Even in the early part of the nineteenth century these hills, though greatly reduced, still raised their heads above the surrounding houses; they were both finally levelled during street alterations. To the north lay a flat-bottomed valley, later known as The Meadows, badly drained by a stream which came down from the higher ground in the north-west and entered the Tay just east of Castle Hill.[12]

The exact site of the original town is not definitely known. The Statistical Account of 1793 implies that it lay east of Castle Hill, but the original St. Mary's Church, built before 1200, lay further to the west under the shelter of Corbie Hill. By the thirteenth century, however, the general outlines of the town were quite clear.

The westernmost tenement, that of Thomas de Colville, was near St. Mary's Church. The easternmost lay a little to the east of the Castle Rock. The dwellings lay clustered round the castle, which must have existed then, for the name " Castle Wynd " occurs in the early part of that century.[13] By this time the town had attained some prominence. According to tradition, Wallace came from Ayrshire to Dundee to pursue his studies, and struck the first blow for Scottish liberty by killing the son of the governor of the castle, at that time occupied by an English garrison. In 1184 the town had been elevated to the status of a Royal Burgh, but however it may have flourished during the time of Alexander III, the golden age of Scottish commerce, its progress must have been rudely checked by the Wars of Independence. With the return of peace, trade was resumed, and trade alone was responsible for the growth of the burgh.

It behoves us to examine next the qualifications of the site as a trading centre. For maritime trading the main requirements are easy access from land and sea, and safe harbourage. The Tay never presented any serious problems of navigation to small vessels, and its mouth is protected by sandbanks, the Abertay, the Gaa, and Barry Links, which form natural breakwaters against the south-east and north-east winds. Thus the harbourage within the shelter of Castle Rock was as safe as the mediaeval mariner could reasonably expect. Nor did communication with the hinterland present much difficulty. Dundee lies on a natural coast route from Perth to Arbroath and Montrose. The fruitful vale of Strathmore and the more distant Highlands could be reached by routes through the Sidlaws. The westernmost route to Coupar Angus encounters Tullybraccart, but is never impassable unless snowbound. A second route goes through Newtyle Glack to Newtyle and Meigle. This was the track of one of the first railways in north-east Scotland, laid in 1826. Still further east a road runs almost due north and forks in the Sidlaws, one branch going to Forfar, the other passing through Lumley Den and so to Glamis. In the eastern Sidlaws travel is less limited by relief, but two parallel routes always found most favour, one over the moors of Kirkbuddo, the other through the stone-quarrying locality of Carmyllie and on to Brechin. Thus the monastery of Coupar Angus, the royal palace at Forfar, the cathedral city of Brechin, the abbey of Arbroath, and the agricultural centres of Strathmore all lay on roads radiating from Dundee. One further link appeared at an early date—the ferry over the Tay and connections with the abbey of Balmerino, the royal palace of Falkland and the other golden tassels round the " beggar's mantle."

The nature of the trade in the thirteenth and fourteenth centuries, which has been competently surveyed by Miss Grant and other historians, accurately reflects these contacts. Thus in 1225 Alexander II licensed the Abbot of Coupar Angus to export wool

to Flanders. In 1264 wine for use at Forfar Castle came through Dundee. The Customs Returns for 1326-27 show Dundee as an exporter of the products of the hinterland, hides and woolfells, and an importer of better quality manufactured fabrics and spices and confections for the royal household. Coupar Angus and Balmerino were two of the wool-producing houses noted by Pegolotti.[14] We may surmise that Dundee received raw materials from the wild Highlands and sent them, both abroad and coastwise, to the Forth or further south ; though its part in the Highland trade was always rivalled by Perth and it was in fact not until 1402 that Perth abandoned its claim to a monopoly of all the shipping in the Tay. Dundee's trade at this time, though promising, was relatively small. It was one of the seven burghs represented at Bruce's parliament

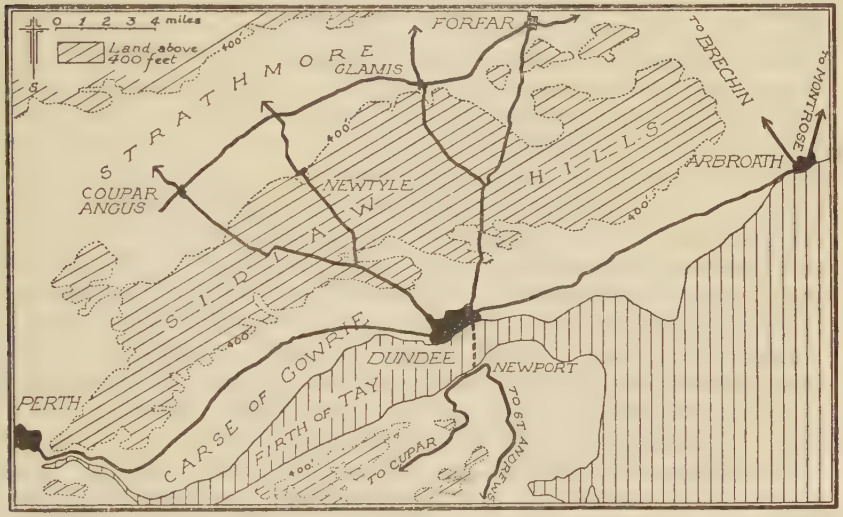

Fig. 1. Dundee and its immediate hinterland.

at Cambuskenneth in 1367, but its customs were worth only £800 as against Edinburgh's £3849, Linlithgow's £1403, Aberdeen's £1100 and Haddington's £873.[15]

The greater volume of evidence relating to the sixteenth century enables us to reconstruct the picture more fully. The town had grown in size, both absolutely and relatively ; its contribution towards the marriage tax of 1585 was second only to that of Edinburgh, £20,000 as against Edinburgh's £40,000,[16] and this relationship remained fairly constant throughout the century.[17] The town had now expanded beyond the thirteenth-century bounds and was enclosed by a wall said to have been built by French mercenaries employed by Mary of Guise. North of the Town Wall lay the orchard of the Grey Friars, which Mary gave to the town as a new burial ground in 1564 because " ye buriall pest and other contagious seekness " were " ingenerit " by St. Clement's Kirkyard

south of the High Street. Further east, in an angle formed by the wall, part of The Meadows had been converted into a mill-pond. North-east of the town, beyond the Wellgate Port, the highway climbed up Rotten Row, which later became the Barony of Hilltown and which had already developed an industrial life of its own. The harbour had been artificially improved with piers and bulwarks, the Gild Merchants and the Craft Gilds had already acquired corporate status, and that friction between merchants and crafts peculiar to Scottish burghs had already appeared.[18]

The town was still predominantly a trading centre, but a new element, industry, had entered its economy. Hume Brown pointed out that by the sixteenth century the intimate contact between townsmen and agriculture had weakened. It lived on, even till the time of the first Statistical Account, but the very incorporation of crafts indicates a more whole-hearted attention to industry as a full-time occupation. As early as 1527 Hector Boece could write, " Dunde, the town quhair we wer born, quhair mony virtewus and lauborius pepill ar in, making of claith." Fifty years later Bishop Leslie found it difficult to say whether the town's wealth lay mainly in trade or industry : " neither sal ye weil discerne quither thay be richer in outlandis geir [foreign wares] and merchandise, or in thair awne labour and industrie." [19] The main products of Dundee's industry were textiles, wool, linen and some hemp. The *Compt Buik* of David Wedderburne (1587-1630) contains miscellaneous references to the export of " lyning," " narrow blew clayth," and " hemp clayth." Dundee was importing almost as much dyestuff at this time as the rest of Scotland put together, but Wedderburne still sent cloth to Rouen to be dyed " fyn scarlet to be my lassis weylecottiz."

The sheet-anchor of this textile industry was plaiding. The plaid or cloak was the prevailing costume for men of all but the highest rank. Women of all ranks enveloped their heads in plaids whenever they appeared in public. The custom was condemned with all the fury of which the old Scots language was capable, but fashion is greater even than the pulpit and in the time of Charles I Lithgow could still ask

> " . . . should women wear
> Their winding sheets alive, wrapt up I swear
> From head to heels in plaids."

The demand for this fabric was not entirely domestic. From 1611 to 1614 the average value of " claythe and plading " exported from Scotland was almost £60,000, or nearly 40 per cent. of the total value of all " commodaties maid and wrocht in the land." [20] Of the textile raw materials some were imported. The Dundee Shipping Lists (1580-1618) and the *Compt Buik* refer to hemp and lint from the Baltic, but the wool must have been home produced, for the country generally had an exportable surplus.

The industry was in many respects an offshoot of that land and sea trading for which Dundee was so well situated, but its growth was favoured by local conditions. The agricultural hinterland was extensive enough to permit of the cultivation of " money crops," hemp and flax, as well as of food crops. The necessary soft water was supplied by Tod's Burn, or by the millpond and aqueduct which were constructed during the sixteenth century.[21] By the end of the sixteenth century the King and the Convention of Royal Burghs were both taking steps to stimulate the native cloth industry, by not very successful attempts to introduce Dutch weavers, and by restricting the export of raw wool. But the industry could never have become of more than local significance had not the trading links already existed. Dundee is plainly well situated for trade with the eastern seaboard of Europe ; and a skipper coming from the Baltic with a cargo of timber and iron could, with little expense, bring a small parcel of hemp or flax as well. Similarly the same skipper off to France from Dundee with skins and fish would take a parcel of cloth to sell " quhair he hapnit to mak mercat."

So whilst the textile industry was increasing in relative importance Dundee stood out in the time of James VI as an importing and distributing centre, and the Shipping Lists and *Compt Buik* give a very complete picture of the nature of the trade. The town had between twenty and thirty ships in the Baltic trade alone.[22] The majority of them traded with Danzig, some with Königsberg, some with Stralsund and odd ones with other ports like Lübeck. With great regularity they brought timber, iron, pitch and tar, hemp and flax and sometimes beer, glass, flour, wax or copper kettles. The large imports of timber are at first sight surprising, though foreign travellers in Scotland, from Æneas Sylvius in the fifteenth century to Dr. Johnson in the eighteenth, all noted, and perhaps exaggerated, the treelessness of the land. It seems that the " forests " of which we read so much in the early charters were simply tracts more or less dotted with trees and more important for hunting than for forestry. Deforestation seems to have proceeded in Scotland since the time of Agricola, either as part of the general pacification of the country, or in an attempt to improve sheep pastures and exterminate wolves, or simply for fuel.

Southwards Dundee traded with Flanders, Spain, France and England. The imports were more miscellaneous than those from the Baltic, but there are constant references to wines from France and Spain, salt from Rochelle and St Martins, dyes from Dieppe and Bordeaux, bark (for tanning ?) from England, and hardware, playing cards, paper and toys from France and Flanders. Spices and luxury goods, always prominent in early overseas trade, still appear. Thus in 1599 Dundee imported 1100 lbs. of liquorice, 2695 lbs. of cloves, sugar-candy, dates, etc., 640 barrels of onions, apples, playing-cards, lined hats and " 1500 balls callit racket balls." [23]

The export trade still consisted mainly of the fruits of the earth or the sea. Fynes Moryson's summary of Scottish exports is confirmed by the returns for 1611-14, except that he neglected fish. Skins were the biggest single item, " the skins of Weathers, Otters, Badgers and Martens." Next came herrings, then hides, cloth and plaiding, wool, salmon, linen yarn and cloth, and " smal salt." Dundee had consolidated its position as a collecting and distributing point, not only for the neighbouring lowlands but also for the Highlands. John Major writing in the sixteenth century spoke of Perth and Dundee as the two markets for Highland horses. Coasting vessels brought down dried fish and butter from the Orkneys and herrings from the Hebrides.[24] Trade still followed the tracks beaten out for it three centuries earlier ; though, says Fynes Moryson, " the Scots are very daring . . . they have not hitherto made any long voyages, rather for want of riches than slothfulnesse or want of courage." Scotland had not yet joined in the contest for the golden apples of tropical and Atlantic trade. When she did the whole commercial centre of gravity shifted from the east of the country to the west.

When this re-orientation took place Dundee was in no condition either to resist it or to join in the scramble. Misfortune began with the Civil War when the town was sacked by Monk and one-sixth of the inhabitants were slaughtered. It is said that Monk captured the town when the garrison were having their mid-day beer, a drink for which the town was becoming celebrated. Less than two decades later the harbour was destroyed by storm, and the Scottish parliament imposed a general tax to repair it, but in 1675 it was still dilapidated.[25] The Guildry records during the following half-century are consistently doleful. In 1678 they speak of the " tounes low conditione," in 1721 about " ye decaying state of ye Burgh." With these particular misfortunes must be reckoned those acts of government which, for better or worse, affected the whole of Scotland. The Union with England (1654-60), the wars with Holland, and Colbert's protective policy in France all hampered Scottish overseas trade, and finally the Union of 1707 ruined the woollen industry, though by way of recompense it opened a " prodigious vent " for linens.

It has been suggested that Dundonians lost heavily over the Darien scheme, but an analysis of the distribution of subscribers to that scheme indicates the relatively small volume of capital subscribed in Dundee. Dundee's prosperity came to an end forty years before the Darien scheme was projected, and as a result of this long depression it was not until the middle of the eighteenth century that the town began to reap the advantages of the Union. In 1645 it was reckoned the second most important town in Scotland, in 1695 it had fallen to fourth.[26] Thomas Tucker, reporting to Cromwell, wrote, " The towne of Dundee was sometime a towne of riches and trade, but the many rencontres it hath mett with all

in the time of domestick comotions . . . have much shaken and abated her former grandeur ; and notwithstanding all, shee remaynes still, though not glorious, yett not contemptible." It is said that each of Monk's soldiers received plunder worth £60 sterling. "They gatt a very rich bootie ther, not onlie of the inhabitans, bot also of severall strangers. They gatte many ships in the harbery, nire by 200 veshells, great and small" (Diary of John Lamont). Richard Franck, in one of his most perversely grandiloquent passages, lamented on the town in 1658, "Ah, poor Dundee ! torn up by the roots ; and thy natives and inhabitants pick'd out at the port-holes. Can honour shine in such bloody sacrifices ? . . . English men without mercy are like Christians without Christianity. . . . But he that doom'd Dundee to die, is dead himself, and doom'd ere this ; and Dundee yet living to survive his cruelty." Thomas Morer, an army chaplain who visited the town in 1689, formed a better impression. He noted the piers, "for the conveniency of shipping," and the buildings, which indicated the substance of the place. He was, however, "handsomely treated at the charges of the corporation," and his spectacles may thereafter have been rose-tinted.

During these years of misfortune the life of the town remained almost stagnant. The population grew but little. In the century 1650-1750 it increased by about 50 per cent., reaching a total of roughly 12,000. In the next fifty years alone it doubled.[27] The built-up area was bounded westwards by the modern Tay Street, northwards by the Howff, and eastwards by the Sugar House. As late as 1746 a "country house" could be situated at West Port. The situation had been prescribed by a physician for the "salubrity of the air," and for the "precious and wholesome flavour arising from a cow byre below stairs." The retail shops were small, and sold oil, salt, candles, sugar, black soap, peat and heather.[28] The general impression to be gained in the time of William III or Queen Anne is that of a place suffering from prolonged depression, lacking resiliency and recuperative powers, and, in consequence, not yet able to take advantage of the opportunities of economic expansion which geographical discovery and union with England bestowed upon the country. The economic life of the town continued sluggishly along lines already laid down. Raw materials from the hinterland constituted the bulk of the export trade. The Glamis Papers contain several references to the export of grain : "This day does Corsar's shipp called the provenance of Dundee sail, the bill of loading is for tuo hunder and fourty nyne bolls wheat, tuo hunder and thirtie tuo bolls of bear and fiftie six bolls pease . . . the shipp is bound for Dunkirk." [29] Stones from the Carmyllie quarries were shipped to London and Holland as paving and mill-stones ; and slates and freestones were similarly conveyed from Glamis to Dundee harbour on pack-horses and shipped thence.[30]

By the second half of the eighteenth century the wave of prosperity which started in the west of Scotland was lapping against the walls of Dundee, and by 1800 the accounts become as optimistic as those of 1700 had been depressing. As early as the 1770's David Loch was able to describe the place as large, prosperous and "greatly increased within these twenty years, and still continues to be enlarged." [31] He estimated the population at 14,000. By 1788 it was over 19,000, and by 1801, 26,804. The built-up area

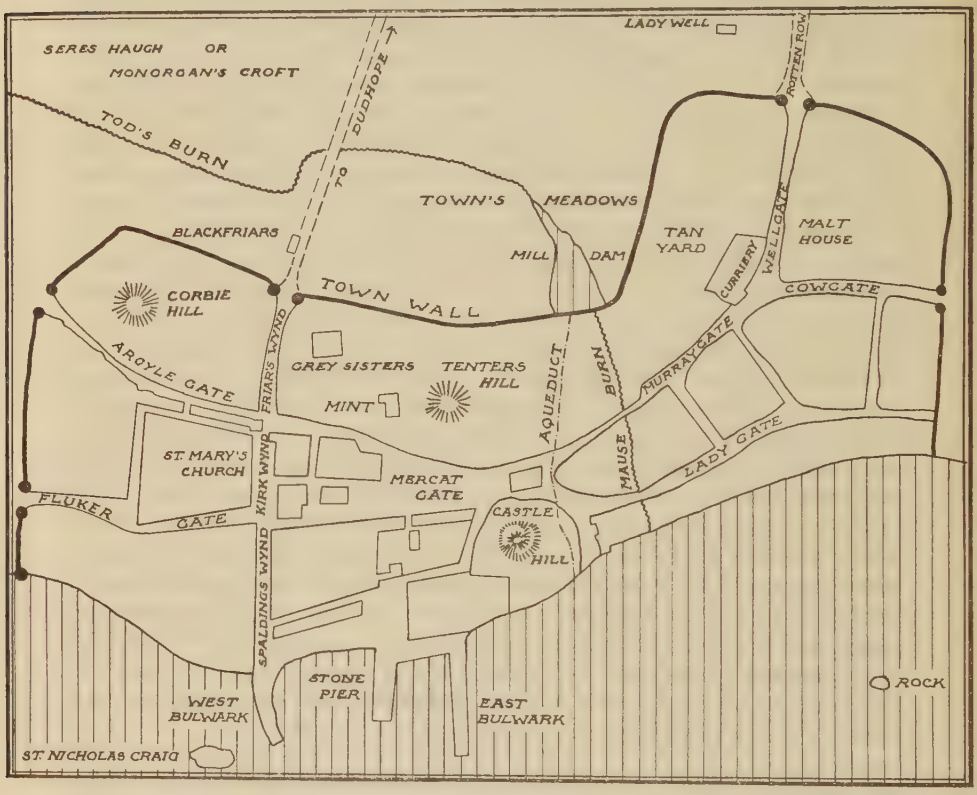

FIG. 2. Sketch plan of Dundee in the sixteenth century.

had at last spread beyond the old town walls, especially alongside the main roads radiating towards the hinterland, and before 1800 all the gateways had been removed except Cowgate Port, from which George Wishart had preached to the plague-stricken people in 1544. The common meadows north of the town wall had been partially drained, enclosed with stone walls and laid out for washing and bleaching linens. The harbour in 1800 was still a small tidal basin protected by breakwaters of rubble, but the roads between it and the centre of the town were being improved by blasting through Castle Rock, and a few years later, in 1815, control

of the harbour passed from the Town Council to a newly constituted commission, who promptly began the works which resulted ultimately in the present line of docks running along the waterfront east of the original harbour.[32]

No one event was responsible for this new prosperity and vitality. The government bounty, the activities of the British Linen Company and Board of Trustees, and the dislocation of industry on the continent during the Seven Years' War, all contributed to the rapid expansion of the linen industry. Outlets for coarse linens were found in the tropical plantations where they were used for clothing slaves and for wrapping produce. None of these factors was peculiar to Dundee, except that, for some reason which is not entirely clear, it had always concentrated on the coarser end of the textile trade. " Of all Linens," said *The Gentleman's Magazine* in 1742, " the fabric of the Dundee Linens is the poorest and meanest." At all events the abolition of hereditary jurisdictions in 1747 was like the removal of a boulder from a mountain burn. For the next century and a half the town displayed remarkable vitality and resiliency. When the linen trade sagged in the 1770's the manufacturers immediately considered reverting to wool.[33] Such resiliency was possible only so long as the volume of capital locked up in equipment remained low. It can be seen again in the turn over to jute in the 1830's, but with the advent of steam and expensive machinery the economy of the town became less flexible and has to-day an almost stultifying rigidity.

By 1800, then, Dundee had become a rapidly growing industrial town, caught up on the swell of the Industrial Revolution, with most of the features common to industrial towns of that time. Contemporaries deplored the small crowded dwellings, the absence of open spaces, the narrow streets and lack of public institutions. The town's water still came from Lady Well, and the sanitation was primitive. Morality had degenerated. A writer in *The Dundee Magazine* in 1799 said, " vice, manufactures and population appear to have kept a steady jog trot together." This material prosperity turned mainly on the manufacture of coarse linens and canvas for shipping. Flax cultivation in the district ran into thousands of acres, but the town was becoming increasingly dependent on imported raw materials and the monopolistic position of Baltic and Russian growers was already noticed. Thus whilst the commerce of the place had grown far beyond the level of the sixteenth century, its character had changed. Dundee was no longer primarily a distributing and collecting centre. Its commerce now consisted mainly of industrial raw materials for very local use and finished goods manufactured locally. The links with the hinterland had been strengthened by the construction of turnpike roads, but the hinterland lacked the essentials for industrial development. Had Strathmore contained iron ore and coal, the Tay might well have become a second Clyde with commerce of as

general a nature as it was two centuries earlier. But whilst flax and hemp dominated both industry and commerce, Dundee in 1800 showed much versatility. The old-established fishing and fish-exporting trades lived on, and had broadened into whaling. Four hundred people were employed in cotton manufacturing. Seven firms made thread, though they employed mainly outworkers in low-wage rural areas. Tanning was still carried on, glass-making was being tried, there was some brewing and some shipbuilding. The ancient woollen cloth and bonnet-making trades had quite gone and left no memorial other than a few street names.[34]

This industrial activity, it must be noted, preceded the general application of power-driven machinery to the manufacture of linen. The halting progress of machinery in the 1790's and early 1800's may be traced in Warden's *Linen Trade.* It suffices for our purpose to say that in 1811 the total capital in spinning equipment in Dundee was only £22,000. Dundee's success in this phase of its evolution lay in the ease with which fibres could be imported from the Baltic, but much more in the manual dexterity of the people, inherited from the days of plaid and bonnet-making ; and the momentum acquired in this phase was enough to offset the lack of fuel when steam power became essential. Unlike Lancashire and the West Riding, Dundee never made much use of water-power. The sixteenth-century aqueduct from Tod's Burn to the Tay was used till the 1770's by John Wemyss and Son in connection with their thread and dye-works ; but of real water power there was none nearer than the Dighty, a fact deplored by the writer of the Statistical Account. The purity of both water and air in the Dighty Valley offset the cost of transport, and in the late eighteenth century the course of the stream was dotted with bleachfields and mill-ponds, traces of which can still be seen.

Nothing is easier than to overestimate the degree of industrialisation and urbanisation of towns at the beginning of the nineteenth century. The attention devoted to agriculture in the section on Dundee in the Statistical Account does something to check this tendency. Furthermore there is much evidence of outwork, and the neighbouring rural districts were of greater relative importance than they are to-day. Housewives from the hinterland brought in their yarn to sell in the " Luckenbooths " at the west end of the High Street, and the industrial organisation based on outwork persisted till the 1820's and 'thirties.

The subsequent growth of Dundee, absorbing neighbouring villages and raising the population to 170,000, was effected without serious break in tradition. Jute is in direct descent from coarse hemp and linen, shipbuilding is old-established and linked to trading and fishing, engineering is an offshoot of textiles, jam-making is but another example of the influence of the fertile hinterland. The exact distribution of these industries, the sources from which they derived their labour, and the new commercial links

they called into being, have yet to be studied, and lie outside the scope of the present study.

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[34] These details are mainly from the *Statistical Account.*

SOME ASPECTS OF *TANYA* SETTLEMENT IN HUNGARY

By Professor W. Stanley Lewis

It is a striking fact that on the lowland of Hungary east of the Danube there are no settlements of the industrial agglomeration type.[1] Here all human settlement is closely associated with an economy based upon agriculture ; and, though villages and market towns in the accepted interpretation of the terms do occur, they are found only on the marginal zone of the plain. Elsewhere they are replaced by a number of very large town centres around which are scattered single farms (*tanyas*), or loose groupings of farms and farm labourers' dwellings. Each town is the administrative and economic centre for the *tanyas* within its boundaries, which latter usually enclose very wide areas * and many scattered settlements of the type indicated. A similar form of settlement, more limited and somewhat modified, is also found in the Rumanian and Yugoslav portion of the Alföld.

The Hungarian parent groupings have been examined at considerable length by Dr. Tibor Mendöl.[2] He recognises seven zones in each urban nucleus ; but distinguishes between larger and lesser concentrations. The former, such as Debrecen, Szeged and Kecskemét, possess buildings of a true city type not unlike the banks, stores and blocks of offices which characterise any of the larger cities in Western Europe. In the smaller urban centres, of which Szolnok, Nyíregyháza and Hódmezövásárhely are typical examples, such buildings are rarely, if ever, to be seen. But, apart from this difference, all groupings are alike in their general development and organisation, in that a zonal distribution of population and activity is the rule. Expressed briefly, the plan is as follows. In the city centre is a large business quarter around which lies a subsidiary region of small stores and of the residences belonging to workers wholly occupied in the city. Next comes the area covered by the houses of clerks and skilled artisans. After this there is a significant break which heralds the *tanya*, and here begin the small houses of day-labourers whose interests are primarily agricultural. But side by side with them may be found the dwellings of people working in the factories which have sprung up in this same region to develop industries based mainly upon agriculture.

Thus one sees that the *peasant city* has developed a central business cell, surrounded by a residential area of immediate city workers and fringed by an indeterminate region where the people are mainly occupied in the surrounding countryside, though an increasing few have semi-urban interests. It is here that the transition to the

* *E.g.* Nyíregyháza—108 sq. miles ; Debrecen—370 sq. miles ; Kecskemét—360 sq. miles.

[*By courtesy of the Danube-Tisza Chamber of Agriculture.*

Tanya house and outbuildings, Szeged.

[*By courtesy of the Danube-Tisza Chamber of Agriculture.*

Tanya stock and storeyard, Hódmezövásárhely.

[*By courtesy of the Danube-Tisza Chamber of Agriculture.*

Typical *tanya* surroundings, Hódmezövásárhely.

Loam bricks as used in the construction of *tanya* buildings ; Bugács *puszta*, near Kecskemét.

tanya type of settlement begins to take place, and one must clearly distinguish between this relatively simple zone and the complex huddle of urban groupings which occurs in modern Western European towns immediately beyond the business centres and their directly dependent residential quarters. The Hungarian expression is still one of single-storeyed houses, simple in structure and having few relationships with the large stores and offices of the city centre.

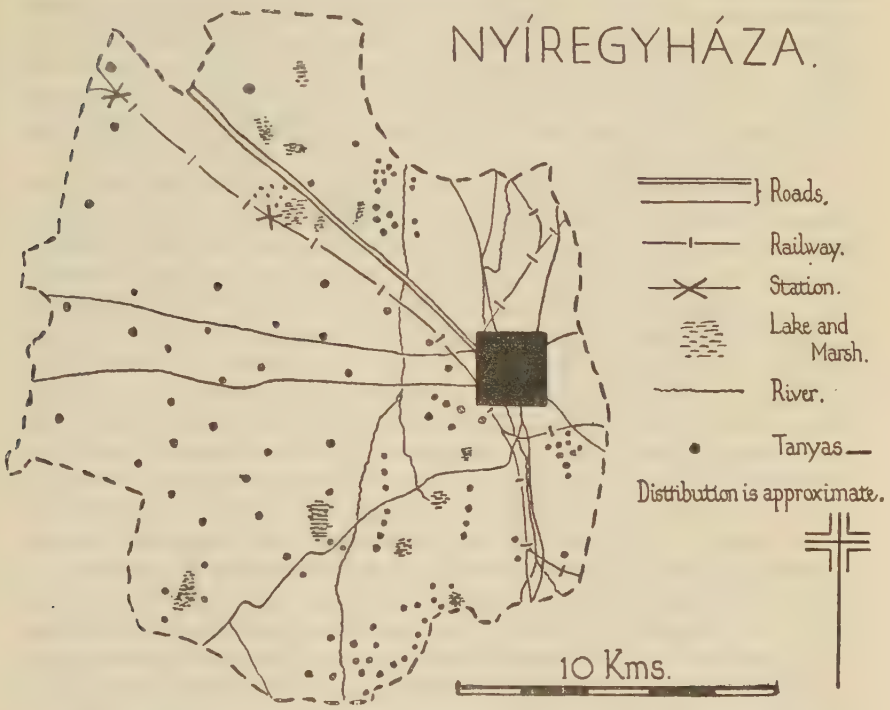


FIG. 1. The precincts of Nyíregyháza, showing its *tanya* dwellings. Each *tanya* group shown houses at least one hundred people; the total population of the town is about 54,000.

Even the upstart factories have not modified architecture, position, road-making or lighting systems.

Beyond this zone is now growing up a type of settlement common to most great cities. This is the nucleus of a prosperous suburban agglomeration, where the wealthier workers in the city have country residences to which they withdraw at the end of each day. Beyond them, as roads fade out and the roughest tracks begin, lies the sparsely-settled *tanya* area.

A *tanya* may be defined as the unit of a dispersed type of settlement which arose, entirely for purposes of cultivation, through seasonal migration from a parent nucleus. The origin of all *tanyas* is inextricably bound up with the existence of the regional centres around which they are distributed. These huge agglomerations,

called "farmer-towns," and until recently little more than overgrown villages in function and administrative structure, afford, through the story of their historical evolution, a clue to contemporary conditions in the Hungarian plain. It is usual to explain these cumbersome groupings as being products of the Turkish occupation of the lowlands in the sixteenth century, as a result of which refugees from devastated villages were driven to seek safety in, and consequently to swell the population of, small marsh-protected towns. During the occupation, which lasted for over one hundred and fifty years, it is evident that most of the pre-existing villages were destroyed. Consequently the structure of these initial and spontaneous settlements is not known. But certain speculations thereon may profitably be made.

Looking backward, it is reasonable to suppose that the pre-Magyar population had settled small elevations, rarely more than fifty feet above the average level of the plain, which is three hundred and fifty feet. Upon such elevations men would maintain a self-sufficient existence as hunter-fishers and shepherd-cultivators. Natural conditions probably favoured the development of small isolated communities surrounded by large areas of unoccupied territory. Life must have been exceedingly difficult upon these inhospitable lowlands with their lakes, marshes, alkaline soils and wide tracts of drifted sand. Mediaeval documents testify to the inhospitable nature of the region and permit us to contrast it with the soft attractiveness of the fertile and populous downland of neighbouring Pannonia. The coming of the Magyars in the ninth century certainly stimulated the growth of many settlements in protected or strategic locations, though large areas along the major rivers still remained unsettled. For several centuries after this new colonisation, conditions were disturbed and unstable. Internecine struggles, the establishment of feudal control, royal concessions granted to towns and royal foundations set up, combined to maintain a feeling of insecurity in land tenure amongst the outlying villages. To these internal difficulties must be added that of the constant menace of attack from the East. In 1241 this materialised in the Tartar invasion which devastated the isolated areas of the plain, decimated the population and inaugurated a new era of penetrative settlement by many foreign elements. Diverse interests were pursued, ranging from industry and trade amongst the German colonists, who were invited into the region, to the pastoral activities of nomadic shepherds from the neighbouring highlands.

The attraction and influence of the towns appear to have remained strong; and the final invasion of the Turks in 1536, beginning with the disastrous battle of Mohács, may be regarded as the last of the impulses towards concentration of settlement.* For nearly two centuries the towns now remained

* Prior to the Turkish invasion, the county of Békés had 78 villages, at the time of the Turkish withdrawal, 7, and to-day it has 32.

the permanent headquarters of a large proportion of the lowland population : the villages being neglected or abandoned. Their almost complete annihilation was undoubtedly brought about by the Wars of Liberation, which erased such few traces of the earlier forms of settlement as had survived. By this time the towns had acquired rights over great stretches of the depopulated countryside ; and land which, in all probability, had been held in common by villages became the property of the towns by whom the erstwhile owners had been succoured.* Unfortunately it had, in the main, reverted to a condition fitted only for nomadic pasturage, and the period of recolonisation found a huge majority of peasants situate in swollen nucleated groupings where they could neither find the scientific knowledge requisite for prosperous resettlement, nor obtain the cultural advantages to be found in the towns of Western Europe.

As a result of these conditions the initiative for early eighteenth-century recolonisation was thrown into the hands of Germans and Rascians ; though the lowland within the present frontiers of Hungary was mainly repeopled by Magyars and Slovaks.[3] The new settlers did not proceed direct to the uninhabited territories ; they came or were brought either to the existing towns or to small centres of declining population such as Nyíregyháza. The highlands to the north-west of the Alföld were, throughout this period, sources of a continuous and increasing stream of settlers flowing towards the plain. Yet for several decades the influx made little impression and the land remained sparsely populated—a region of isolated farms surrounded by extensive areas of grassland.

At this stage it is necessary to consider the natural endowment of the lowland in order to ascertain what limitations it imposes upon settlers. Averaging some three hundred and fifty feet in height, it is floored by Pleistocene and Recent deposits of loess and alluvium, with occasional patches of alkaline soil and two great stretches of drift sand, viz. : the Nyirség, in Szatmar County to the north-east ; and the Danube-Tisza interstream area. The climate is strongly continental but uncertain in both the incidence and the amount of rainfall. The wide yearly range of temperature, 25° C., increases the likelihood of early and late frosts, so that the cultivation of industrial plants and fruit crops is a precarious undertaking. Generally speaking, early crops are avoided in favour of frost-resisting varieties of winter cereals ; and even amongst these, irregularities of climate cause great fluctuations in yield.

Such, in broad outline, were the conditions faced during the early eighteenth century by incoming settlers whose most common and best understood activities were those of horse- and cattle-breeding. Thus their change over to land cultivation was slow ; for their agricultural methods were uncertain and primitive. New owners or tenants of land occupied more than they could work adequately ; and the wasteful two-field system was widely employed.

* Thus Debrecen owns the land belonging to 22 villages.

Instead of cultivating intensively ground already broken up, these early settlers constantly abandoned partially-exhausted land and turned up virgin soil, encroaching more and more upon the common land, which was further annexed by constant new immigrations. Soon the distance which workers had to travel from their dwelling-places to their fields was greatly and rapidly increased,* until it became absolutely necessary for a landowner, living in the town but

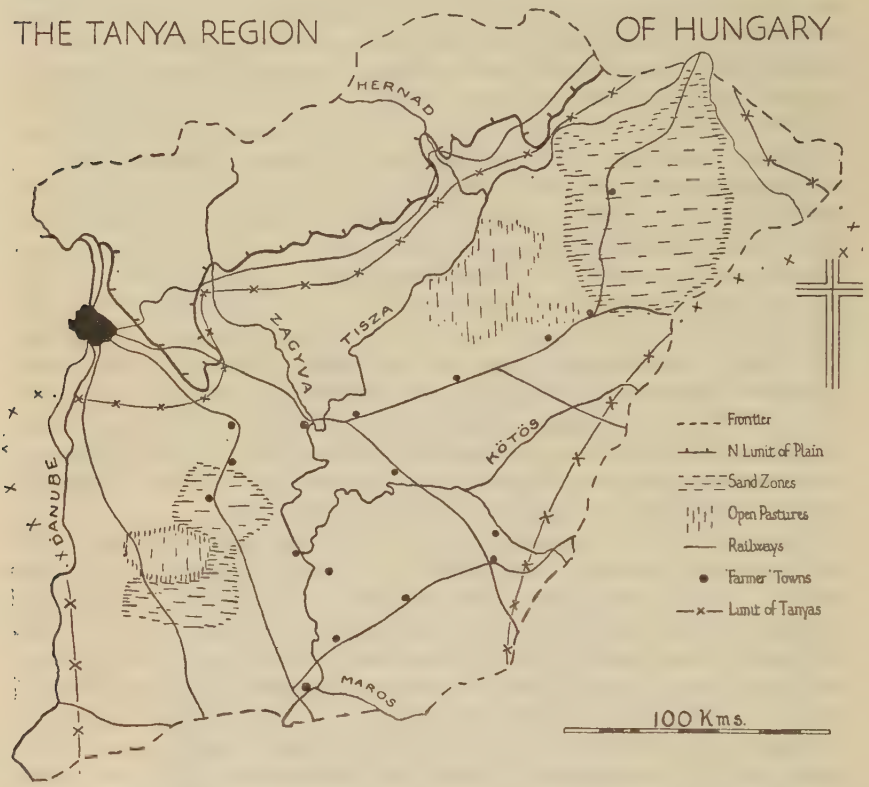
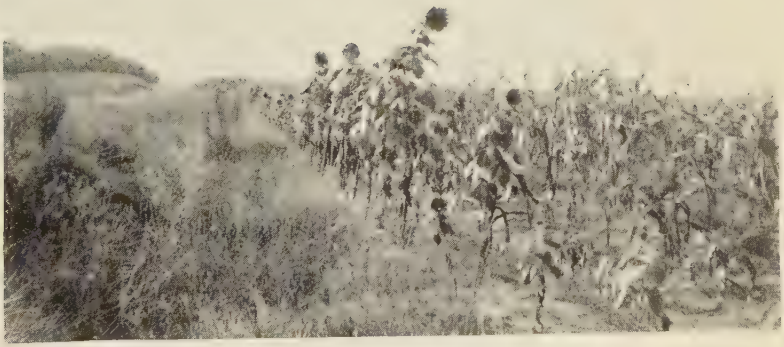


FIG. 2. The Hungarian lowland, showing the main region of *tanya* settlement. The "farmer" towns chosen are those around which *tanya* settlement is thickest.

holding land remotely situated on the *puszta*, to build upon it stables for livestock, storage places for implements, and temporary shelters for his labourers. At first the occupation of these make-shift structures was entirely seasonal and was only undertaken by workers ; at a later stage the owner set up larger and more permanent buildings into which he and his family moved for several months of the year, still maintaining a town house for use during the winter. To-day this holding in the town has disappeared in a

* In some regions a journey of 10 to 20 miles.

Tanya yard, with well and stables ; Bugács *puszta*.



Maize field with border of sunflower plants ; the depression on the left of the picture is a road. Bugács *puszta*.

Market-day " park " at Kecskemét.

[*By courtesy of the Danube-Tisza Chamber of Agriculture.*

Herd on *puszta* (prairie), with a *tanya* in the distance ; Hódmezövásárhely.

great number of cases ; and the *tanya*, whatever its form, is normally the permanent and only dwelling.

There are two very different types of *tanya* settlement. The earlier and more simple is the single *tanya*, always built upon land belonging to it. The house is a plain structure of dried mud or loam bricks and is thatched, shingled or, in the most recent examples, tiled. It is set at one extremity of its grounds, so that the gable-end overlooks the street or path and an open wooden fence or earth wall protects it from invasion by livestock. Between the house and the gardens or pasture is a yard with a wall. In the humbler *tanyas* the cattle and horses are stabled in an extension of the house under the same roof, where poultry are also housed during the open season. The precious animal manure is accumulated in a separate stall ; and separate structures cover the threshing floor and the grain store. In the better class *tanyas*, the animals are stabled apart from the house. Beyond the yard lie the kitchen gardens with their vegetables, fruit trees and vines, enclosed by a ditch or a boundary of sunflower plants and acacia trees. Beyond these again are the cultivated plots and the pastures. The whole limits of the *tanya* are frequently demarcated by willow and acacia-edged ditches which assist drainage and restrict the movements of stock. Minor variations in detail occur in different parts of the plain. For instance reed and thatch roofs are replaced by shingles near the hilly borderland ; but, except in certain regions such as the sandy territory of the Nyirség, the above form is the rule and no doubt suits the individualistic outlook of the Magyar peasants.

The second form, produced by modern necessity, is the grouped *tanya*, called the *bokor*.[4] Such *tanyas* are often groupings of the single type ; but many variations exist in different parts of the plain and they are not always an evolution of the single farm. In some districts each house in the group is surrounded by its own ground and separated from adjoining plots by ditches. In others the house may form one of a group surrounded by land worked in common. The group may resemble the *strassendorf* in layout, though more frequently the dwellings cluster round a central open space—an old-fashioned drinking pool for animals, or a pond in which to wash vegetables or steep hemp. As in the case of the single *tanya*, shelter is an important factor. For this purpose the acacia (*Robinia pseudoacacia*) is the tree most commonly cultivated ; it grows quickly ; shares favour amongst apiarists with the mulberry ; and provides an excellent wood for the manufacture of tools. In the *bokors* internal housing arrangements are to-day becoming more elaborate and luxurious ; but as yet there appears to be little attempt at systematic planning of the whole group.[5]

Settlement in *tanyas* has certain well-marked advantages and disadvantages. In its growth the system has marked a steady advance in agriculture to the extent that it has established an immediate and more intimate contact between the farmer and his

land. Semi-nomadic grazing has decreased in the face of increasing and intensified methods of cultivation ; until the livestock are now becoming a more integral part of the farm economy. But, in order to appreciate the nature of the advantages and the present limitations of the whole system, a short digression is now essential.

The real backbone of the economic life of Hungary is the development of a system of drought-resisting agriculture, whereby the low yields and great variations in quantity of yield inevitably occasioned by the uncertain climate may be avoided. Dry farming methods offer a temporary answer to certain problems ; but permanent improvement is only to be effected by the establishment of a carefully organised system of irrigation and re-afforestation. Unconsidered river regulation has already lowered the level of the water-table and caused the formation of useless alkaline soils, notably near the Hortobágy pastures. So much remains to be done ; and it is becoming increasingly necessary to break down a traditional system of dependance upon one or two major crops, which involves a constant need to export livestock, with the consequent loss of valuable manure. It is also essential that industries which will employ farm hands during the winter should be established. But changes of such magnitude would involve a degree of co-operation for which the single *tanya* system is not at all fitted, and which would be difficult to achieve even in the group *tanya*. At the same time it can be said that the *bokors* have achieved sufficient co-operative solidarity to cure some of their difficulties ; they are combining for the purchase and transport of seeds, implements and manure ; for the hiring of labour ; and in methods of agriculture which have already substantially increased the productivity of their regions.

But grave social drawbacks still obstruct the movement towards co-operation. Isolated families or small groupings of families living at a distance from large communities tend to develop an abnormally individualistic outlook. The bad roads and inadequate railway systems of the plain are obstacles rather than aids to communication ; and at present impose an almost insuperable handicap upon all efforts to improve public services, co-operative undertakings and cultural activities. In regard to the latter, however, broadcasting has in recent years effected some improvement in the direction of lessening illiteracy.

Another grave social problem associated with the *tanya* system is that of hygiene. The earliest settlements were primitive structures, lacking in adequate ventilation, window-space, drainage and pure water. As a result of these insanitary conditions the general standard of health is low, especially in the winter ; and statistics show a high percentage of *tanya* dwellers dying without or in default of medical attention. Maternal mortality is very high, since neither doctors nor midwives can be brought to assist very many cases.

All these problems associated with the still-developing *tanya* system are fully realised by the people of Hungary and are

approached with an interest that is far from being purely academic. One of the most promising responses is a plan to create " centres," so placed as to be easily accessible to several *tanyas*. In each of these will be established church, school, co-operative store, ambulance service, appropriate clinics, a library, banks and all necessary administrative bodies. Certainly the carrying-out of such designs would do much to improve the internal conditions of the *tanyas*, and to increase materially their contribution to the welfare of the country. But it is a task of great magnitude ; and some conception of the difficulties involved may be gained by recalling the problems associated with the establishment of County Libraries and Central Schools in the rural areas of Great Britain. Moreover, the established " centre " in Hungary will still be faced with the problem of climatic difficulties ; for a severe winter would greatly limit its efficiency. To function completely the " centre " must be accessible to its adjacent *tanyas* all the year round ; and this can only be ensured by a revolutionary improvement in the existing road system.

From whatever angle the matter is approached, such a reform emerges as the primary and essential requirement, if the *tanyas* are ever to become vital elements in the whole organism of Hungary. Adequate and reliable communication with towns, preferably by rail, will encourage permanent settlement in the *tanya*. The advantages are many and obvious. A network of cheap and certain routes would keep horses, and therefore manure, on the farm ; it would foster and facilitate co-operation, thus increasing output ; it would be an incentive to the improvement of dairy farming and market gardening. The latter is especially desirable in *tanya* economy, for it would lead to a great expansion of the vegetable canning industry, which already exists at Kecskemét and Nagykoros. The widespread establishment of agricultural industries is the most profitable line of advance for Hungary ; but it cannot be pursued until the *tanya* dweller is brought easily within reach of an adequate and appropriate general education. Agricultural education is scientific and specialised and can only proceed upon a sound and wide foundation. At present courses of instruction which have been designed by co-operative organisations of farmers and Agricultural Chambers are often partially wasted upon a backward audience.

In short, the peculiar system of settlement reveals a unique relationship to the soil and particular provision must be made if all its possibilities are fully to be realised. The focus of interest is in Man rather than in Nature. A former Prime Minister of Hungary once said : " Man is the worthiest capital." In the Alföld this is very true ; and it is equally true that he can only be put into valuable circulation by a satisfactory system of transport.

NOTES AND REFERENCES

I wish to acknowledge the kindness of many Hungarian geographers and others, but particularly that of Count Paul Teleki, Professor of Geography at the University

of Budapest, who has given up much time on various occasions to discuss this and other forms of settlement in Central Europe.

[1] A concise study of settlement in pre-war Hungary is contained in " Die Siedlungsformen Ungarns," G. Prinz, *Ungarische Jahrbücher*, vol. 4. Berlin 1924.

[2] " Alföldi városaink morfólogiája " (" Morphology of the Towns of the Alföld "), *Tisia*, vol. 1, pp. 3-44, Debrecen 1936. See also E. D. Beynon, " Migrations of Hungarian Peasants," *Amer. Geogr. Rev.*, vol. xxvii, 1937, pp. 214-28.

[3] A complete study of the recolonisation is made by H. Marczali, *Hungary in the Eighteenth Century*. 1910.

[4] In many respects both types of *tanya* resemble the Slovak hamlets known as *kopanice*. See J. Hansak, " Contribution à l'étude du peuplement en Slovaquie : communes et Kopanice," *La Géog.*, vol. 51, pp. 49-67.

[5] For diagrams and descriptions of some representative types, see G. Simkő, " Die Besiedelung der Nyíregyháza und seiner Tanyas," *Foldrajzi Közlemények*, vol. 38, pp. 33-88. 1910.

INTERNATIONAL GEOGRAPHICAL CONGRESS AT AMSTERDAM, 1938

The fifteenth International Geographical Congress was held in Amsterdam from July 18th to 28th under the Presidency of Sir Charles Close, President of the International Union. H.M. Queen Wilhelmina honoured the Congress with her patronage, the Netherlands Government acted as hosts, and the Netherlands National Committee for Geography provided the organisation, which was a model of efficiency. In such auspicious circumstances and with an attendance of over a thousand members the Congress was a pronounced success. The ten-day period offered ample opportunities for the personal contacts that form a valuable feature of such meetings. Social activities and short excursions were numerous and admirably conducted, while there were six longer excursions before and after the Congress to various parts of the Netherlands, and an opportunity of visiting Netherlands India in August. For each of these a scientific guide-book was presented.

A novel feature, due to the remarkable efforts of the Organising Committee, was the printing before the meeting of all the papers contributed : over three hundred of these, together with the reviews of them, question by question, from the thirty-one *Rapporteurs*, are contained in eleven volumes. The importance of this achievement may be emphasised by stating that the writer received in the same week this vast collection in advance and the last volume of the Warsaw Congress Reports (1934) in arrear ! While geographers of many nations took part and discussions were vigorous, it is doubtful if the very active German Delegation and the comparatively silent British contingent were, for different reasons, as fully representative of geography in their respective countries as they might have been. Unfortunately also many of the authors did not attend, and frequently such absentee contributions were not referred to in discussion.

The work of the Congress was performed in ten Sections, of which only one, *Biogeography*, was poorly attended. The Section of *Cartography* was concerned with four matters : the uses of certain projections for specific purposes ; the adaptation of surveying and cartographic methods to photogrammetric practice ; the use of air photography in rapid cartography ; and the presentation of new maps. Perhaps the most

important impression gained was that of the contrasted attitudes of continental surveyors on the one hand and British and American on the other in regard to photogrammetry, the former exhibiting the desire to develop methods and instruments to the point where ground control is largely eliminated, the latter still regarding the air photograph as a valuable aid to normal survey or at least as a supplement to rigorous triangulation. The very imposing exhibition of the official maps of many nations should be mentioned here : each exhibit including an interesting retrospective series.

The Section of *Physical Geography* dealt with five questions, two of which have occupied recent Congresses—Pliocene and Pleistocene terraces and the mapping of erosion surfaces. Of the others only one can be referred to here—glacial erosion—a subject well known to be controversial. Recent careful study points to glaciers both as active excavators and as effective protectors, according to the vigour of the glacial movement. The activities of the *Oceanography* Section showed that this science is very much alive among the maritime nations, including Britain. The most spectacular advance in its realm is the increasing detail with which echo-sounding is now revealing the form of the ocean floor.

It is in the domain of human geography that the greatest developments have been seen in the post-War Congresses, and so numerous were the contributions at Amsterdam that they were divided rather arbitrarily among four Sections. One of these, named *Paysage géographique*, was concerned generally with the ideas underlying terms such as cultural landscape, rural structure, land utilisation, rural and national planning, and elicited a very varied group of papers. Under *Economic Geography* three questions were dealt with : development of seaports, to which, surprisingly, only one British contribution was made ; modes of transport, with a valuable group of papers ; and " means of relating agricultural productivity to geographical factors," an important subject still evidently in the experimental stage of study. To *Human Geography* so-called there were left three questions. Two of these dealt with the relationships of urban communities and were so clearly bound up with the *paysage* subjects that the two were discussed at joint meetings. The third, the causes of migration movements, which treated both European and Asiatic examples, might well have taken some of the contributions to the last Section, named *Colonial Geography*. This drew large audiences and embraced aspects of colonisation and tropical colonies too numerous even to mention here. The papers amount to over six hundred pages in print.

It is difficult to explain the absence of papers of the first category from the Section of *Historical Geography and History of Geography*, in view of the vigour of this branch of geography, but the historians of cartography proved themselves as active as ever. There was similar and perhaps lamentable silence on methodology in the Section of *Methodology and Didactic*, but on teaching methods there were several interesting discussions including one on the important aim of teaching children to understand and appreciate peoples of other lands. The success of this Section was due largely to the preparatory work done by the (British) Geographical Association.

At the General Assembly of the International Geographical Union the following elections took place : Professor E. de Martonne (Paris), hitherto Secretary General, to be President of the Union in succession

to Sir Charles Close ; and Professor P. L. Michotte (Louvain) as Secretary General, with Mlle M. A. L. Lefèvre as his assistant. It was decided to hold the next Assembly and Congress in 1942, the place of meeting to be determined later. Space prevents reference here to the work of the various Commissions of the Union. Their voluminous reports were approved and all were reappointed, that on Types of Rural Habitation now becoming the Commission for the Study of Population.

A. G. O.

PROCEEDINGS OF THE ROYAL SCOTTISH GEOGRAPHICAL SOCIETY

MEETINGS OF COUNCIL, October 4th and 25th, 1938

Membership.—Fifty-five ladies and gentlemen were elected Ordinary Members of the Society.

Presentations to the Library.—The following donors were thanked for their gifts of books, maps or photographs : Mr. D. Colville ; Mrs. James Currie ; the Rev. William Gillies ; Dr. J. D. Gilruth ; Mr. J. Gall Inglis ; Sir George Macdonald ; the Rev. James Meikle ; Mr. A. A. Pinkerton ; Mr. C. B. Boog Watson ; and Mr. William Williamson.

Lecture Session, 1938-1939.—Lieutenant-Colonel G. Dalyell of the Binns, C.I.E., delivered the opening Lecture of the Session at Glasgow on the 17th October—Subject, " The Persian Gulf " (illustrated). Mr. Seton Gordon, B.A., F.Z.S., opened the Session at Aberdeen and Dundee on October 18th and 19th successively—Subject, " The Hebrides and their Wild Life " (illustrated). The anniversary Lecture at Edinburgh was delivered by the Right Hon. Sir John Anderson, P.C., G.C.B., G.C.S.I., G.C.I.E., in the Usher Hall on October 20th—Subject " Bhutan " (ciné views).

The following Afternoon Lectures were delivered in the Society's Rooms, Edinburgh : October 12th : Miss Copeland—" Belgrade and District " ; October 26th : Captain John Anthony, M.C., M.A., B.Sc.—" Forest Life in Malaya " ; November 2nd : Mr. James W. Herries—" Modern Egypt." All the lectures were illustrated.

REVIEWS OF BOOKS

EUROPE

The Highlands and Isles of Scotland. By W. C. MACKENZIE. Edinburgh : Moray Press, 1937. *Price* 15*s.*

The author has given us an exhaustive survey of the Highlands and Western Isles, from the earliest times of which there is any kind of record, up to the present year. The history of the clans in itself is interesting enough, and Mr. Mackenzie's book would be appreciated on that account alone ; but it has an additional value for both the Englishman and the Scot at the present day which can scarcely be exaggerated.

A subject of first importance to both should be the depopulation of the High-

lands and the destruction of a fine race which has done much to acquire the Empire. Mr. Mackenzie shows that at no time in history has the interest of the Highlander been considered, whether he was governed from Edinburgh or from London. Especially since the '45, when the chiefs became, not the representatives and protectors of the clans to whom the land really belonged, but their ruthless, exacting and evicting landlords, has the Highlander been the victim of injustice and oppression. His chief, instead of protecting him, has turned his fertile country into a playground for foreigners, to his own profit but to the further disadvantage of the Highlander.

As this most valuable book shows how the Highlands have reached their present deplorable condition, so it would seem to point the way to the only remedy—the expropriation of the great estates and the replacement on the land, in small farms with the necessary assistance, of the people to whom it once belonged. It has been done within the last twenty years in other and poorer countries. Why not in Scotland? S.

The Land of Britain. Edited by L. Dudley Stamp, B.A., D.Sc. Part 53. *Rutland.* By Margaret E. Broughton, B.A. *Price 2s.* Part 69. *Lincolnshire (Parts of Holland).* By George I. Smith, M.Sc. *Price 2s. 6d.* Part 78. *Berkshire.* By J. Stephenson, B.A., with an historical action by W. G. East, M.A. *Price 2s. 6d.* London: Geographical Publications Ltd., for the Land Utilisation Survey, 1937.

The Reports of the Land Utilisation Survey follow a general pattern subject to individual modifications dictated by authors' tastes and counties' peculiarities. In each there is an introduction delimiting the area considered; a summary of the physical influences (*i.e.* soils and climate); a detailed analysis of the land utilisation (including settlement) under headings prescribed by the Survey; a division of the country according to the findings of the foregoing analysis into land use units; and some attempt at the appraisal of future trends.

The choice of the county as the major unit of treatment was an obvious one, and is as obviously open to criticism; where one land use region overlaps two counties, as in one of these instances where Berkshire marches with Buckinghamshire, it automatically becomes the province of two surveyors who may be in bewildering disagreement with regard to its classification. So long as the Report is issued in separate numbers it would be useful, in this connection as in others, if we could have a key-map of adjacent regions after the manner of the Ordnance Survey on the cover of each. The size of page permits of large-scale diagrams in conjunction with the text to which they are relevant, and the rectangular "snap-shot" maps, each representing three-quarters of a square mile of territory where the land use is typical of a region, are especially to be commended.

The three counties tackled here are representative though dissimilar. Rutland, with over 60 per cent. of its area in permanent grass, has in the Welland valley some of the strongest pasture in the world; Holland, with an arable percentage (nearly 80) exceeded only by the Isle of Ely, contains light "silt" soils among the most valuable agriculturally in Britain; and Berkshire, although already half residential and still in a state of flux, has more woodland than either. The reasons given for a relative decrease in the arable acreage of Rutland within the last thirty years are the low price of grains and the difficulty of cultivating heavy soils (in this case on the Lias Clays); yet in Holland, where it is noted that owing to a decrease in the peat content the soils have within the last fifty years become heavier, tractor ploughing has facilitated their cultivation and heavier yields are the result. In Lincolnshire, where so high a proportion of the utilisation is arable, Mr. Smith, in the best expressed of the three Reports, has been unable to distinguish land use regions and has substituted types of farms, the choice of crops being largely dependent on differences in the mechanical texture of the soil, but determined within those limits by considerations of economics and transport. In Rutland, again, transport is of such paramount importance that one could wish some attempt had been made to map such facilities as exist.

Transport affects particularly the cultivation of industrial crops such as sugar-beet, which has risen to the importance of third crop in Holland, where it stands after potatoes and wheat, but has been hindered in its conquest of Rutland by the absence of transport facilities.

In Berkshire land use can be very closely correlated with soils, twenty-five regions being distinguished by Mr. Stephenson, and settlement with water-supply ; though small and simple, Figure 16 is peculiarly effective. The county as a whole is more complex in its utilisation than the others, and is particularly interesting from a demographic point of view in that rural depopulation in the west is taking place at the same time as rustication of urban workers from London, Oxford and Reading in the east.

Everybody's Paris. By JOHN BRANGWYN. London : Methuen and Co. Ltd., 1938. *Price 7s. 6d.*

A book that an intelligent person will enjoy, *Everybody's Paris* will interest those who know Paris as well as form an introduction to those who do not. In three hundred pages the author covers more than the usual guide-book, and gives details of many " sights " not generally seen. He also describes French habits and customs, town-planning and methods of municipal organisation and government. There is considerable geographical and historical interest, presented in a style which is individual and pleasant to read. B. D. L.

Les Grands Causses : étude de géographie physique et humaine. By PAUL MARRES. Tours : Arrault et Cie., 1935.

The Grands Causses form the Karstic limestone plateaus of south central France. It is a countryside famous for its deep canyons which, traversing it, divide the region into half a dozen bare and lonely plateaus lying at an altitude of 2000 to 3000 feet. Level, stony and waterless, the Causses are sharply differentiated from the surrounding *vallons*, or fertile embayments of clayey rock overlooked by the outer cornice of the resistant limestone, and also from the hill country—of schist and granite, which, with its heather and pines, is reminiscent of some Scottish highland—in which the Causses are set. The platforms of the Causses are thought to be " mummified " since Pliocene times, and are not in process of visible change to-day ; the disappearance of water underground limits erosion on the surface. Only the through rivers, rising in the Cévennes, have been powerful enough to carve gorges, of which the walls are unbroken for great stretches. This is because the affluent streams gush out as springs from the lower strata into which they have penetrated from the dry hanging vales above. The gorges and *vallons* have their orchards and terraces, and these upper valleys are farmed.

The surrounding wastes are sheep pastures. The distribution is very sparse and the most remunerative product is milk. Where faulting has weakened the limestone are to be found the draughty caverns of Roquefort, in which are ripened the cheeses famous from mediaeval (and perhaps Roman) times, and of which the manufacture is now controlled by an active co-operative society.

In spite of the lonely appearance of the Causses and the former inaccessibility of the villages in their wild gorges, a number of causes—the situation of the region, its open plateaus, the transhumance of sheep from Bas-Languedoc practised since prehistoric times—have combined to develop trade and handicrafts. Industries are various. The increasing insistence upon cheese has involved the early sacrifice of the lambs, and hence at a bridge-point of the Tarn has arisen the manufacture of " kid " gloves. The woollen industry has declined, however. The difficulty of railway-making left the Causses rather far from the industrial web of France, and the motor bus and lorry have come too late to prevent the " anaemia " in the growth of its population, or to arrest the " haemorrhage " caused by rural emigration since 1850.

M. Marres' study of an outlying regional unit will find a worthy place among the admirable regional monographs of France. A. G.

Czecho-Slovakia. By Lt.-Comm. E. P. Young. London : Victor Gollancz Ltd., 1938. *Price* 12*s.* 6*d.*

This book is of very special interest at the present time. Commander Young gives us not only a lucid description of the country at the present day, but a most interesting historical account from the earliest times of this ancient kingdom whose story goes back to the beginning of the Christian era. Careful reading of the various chapters on Czecho-Slovakia since the Great War, when it regained its independence, causes one to wonder what may be at the back of agitation against it, and one surmises it comes from outside the country.

The Republic has made enormous progress in the twenty years of its existence, and although the Sudeten Germans and other races who compose it may have minor grievances, the author shows that they are incomparably better treated than the minorities of other European countries. The educational and social services are wonderfully well organised and generous—an example to many other European nations. Commander Young's comprehensive volume should be carefully studied by every thinking person who seriously wishes to obtain an understanding of the most difficult political problem of the present day, and of the competent and hard-working people who have been savagely oppressed for so many centuries, yet have still retained their nationhood.

It is interesting to note that the seventeenth-century Czech, Comenius, was not only the father of the present-day Primary Education, but also of the eight-hour working day ; and that the Czech ruler Jiří in the seventeenth century attempted to form an association of non-aggressive countries on practically the same lines as the League of Nations. S.

Spaniens Tor zum Mittelmeer (" Macht und Erde," No. 9). By Franz Pauser. Leipzig-Berlin : B. G. Teubner, 1938. *Price* RM. 1.20.

This small but compact volume, though it is unconcerned with the immediate Spanish conflict, is none the less a timely attempt to provide for the general reader an historico-geographical background to the present problems in Spain. Herr Pauser describes briefly the physical geography of the Spanish provinces, the maritime position of Spain and its international importance. He gives a short account of the unification of Spain and discusses more fully the problems of Catalonia in the light of its history. The book is interestingly written and even enlivened occasionally by quotations from English newspapers. A number of maps, well drawn and very relevant to the text, together with statistical tables of language groups and population numbers, add to the usefulness of this essay in political geography. W. G. E.

Scandinavia Beckons. By Amy Oakley. London : D. Appleton-Century Co. Inc., 1938. *Price* 15*s.*

Mrs. Oakley describes with vigour and the aid of Mr. Oakley's pen-and-ink drawings her journeyings in Scandinavia including Finland. The routes taken are conventional, and there is the usual combination of historical details, unexpected happenings, comic fellow-travellers, and not a few interviews with celebrities. The style is reminiscent of the enthusiastic American lady-traveller whom one meets in the more frequented parts of Europe. The illustration is on the whole effective ; but maps appear only as endpapers, with places of *special* interest, such as Helsinki and the North Cape, marked with stars. The book will appeal to some readers ; it is light in style if considerable in price, well printed in large type, and earnest and confidential in tone. An element of naïvety is not entirely absent, and the work has a certain charm and a very marked *je ne sais quoi.* T. W. F.

ASIA

Himalayan Assault. Translated by Nea E. Morin. London : Methuen and Co. Ltd., 1938. *Price* 15*s.*

The reason for the organisation of this expedition to Gasherbrum I, or the Hidden Peak of the Kara-koram, was that although the British, Americans and

Germans had all had several Himalayan expeditions, there had been no French National Expedition, and the Hidden Peak was selected as a suitable objective. None of the ten members of the party had any previous Himalayan experience, and it was a wonderful achievement that they should have mastered the difficult portion of the climb before an unusually early monsoon compelled them to abandon the attempt.

The story is told simply and modestly, and the highest praise that can be given to the translator is to say that the book reads as if it had been written originally in English.

There are the usual appendices, including such subjects as Diet, Geology, Equipment and Photography, and three maps. The illustrations do not approach the perfection of some recent publications, but they are good and illustrate the text adequately. A. H.

French Indo-China. By Virginia Thompson, Ph.D., London : George Allen and Unwin Ltd., 1937. *Price* 21*s.*

This is a thoughtful study of the Indo-Chinese civilisation and of the French administration imposed upon it.

Little of the voluminous literature in French on Indo-China has reached the medium of English, and this work is therefore valuable for readers in Britain who wish to learn of other Asiatic lands ruled from Europe. Dr. Thompson has visited the country, but of this the reader finds too little trace ; the writer, too afraid perhaps to hand on impressions which might appear superficial, has stuck to the texts, with which she has dealt in orderly fashion. An introductory essay on Annamite civilisation, in which ancient village life was overlaid by imported Mandarin rule, is followed by one on the development of French administration. In Indo-China there was not the original Company rule with which possession in India and other lands of the British Empire began ; as was to be expected, one finds less of the stability, continuity and prestige associated with the civil service than in British administrations ; knowledge of the country and its languages were too often lacking, and changes of home government were more upsetting than in British colonial history. On the other hand, there took place no such sweeping change as the substitution of landlordism for peasant holding which was effected in parts of India by certain English landlords. Other sections outline the economy of Indo-China, the contacts of civilisations with their resultant reactions, and an account of Cambodia and Laos. A. G.

AFRICA

The Gold Missus ; A Woman Prospector in Sierra Leone. By Katharine Fowler-Lunn. London : George Allen and Unwin Ltd., 1938. *Price* 12*s.* 6*d.*

We know of no book since Mary Kingsley's which gives a better picture of West Africa than this volume. This also is written by a woman, and one equally accomplished. Mrs. Fowler-Lunn, an American reared in Boston, unconventional and independent, early resolved to adopt the profession of a geologist, an unusual one for a woman, and trained herself for the work not only academically but in the matters of hygiene, cooking, camping, climbing and—not least important—solitary living. After marrying an English Government geologist, she was not permitted to accompany him to the Gold Coast, but, not to be beaten, she went on her own to Sierra Leone, which she explored for mineral resources. Her work proved so successful that it brought her two successive private engagements in the same colony. It is the record of her experiences in search of iron ore, gold, and other metals that is given in this delightful work.

Mrs. Fowler-Lunn travelled alone, with half-civilised carriers, through wild and unknown areas, encountering perils and thrilling incidents (some of which were the result of her ignorance of native customs), and enduring hardships under which most women would have succumbed. She was sustained by the fascination of the work, the novel scenes which she witnessed, and the peace of

the remote solitudes : she was out of touch with the world to such an extent that she " felt dizzy when visualising its giddy life," and when she got back to civilisation she felt as if in a dream. " I had proved," she says, " that women were no liability in the tropics."

What gives the book its geographical value is the accuracy of the descriptions (shown by a multitude of little touches) and the evidence, provided incidentally, of the reactions of the white constitution and temperament to tropical conditions. Its power of evoking the essential spirit of Africa is remarkable. W. P. L.

African Mirage. By Hoyningen-Huene. London : B. T. Batsford Ltd., 1938. *Price* 12*s.* 6*d.*

The author, who is an expert photographer, has recently circled through northern Africa by the conventional routes from Egypt to the Sahara. From such a hurried trip one does not exactly expect any addition to our knowledge, but the book contains a very fine collection of photographs of native life. The staccato style of the letterpress may be somewhat irritating to the average reader. S.

The Human Geography of Swaziland (Monograph of the Institute of British Geographers). By Miss D. M. Doveton. London : George Philip and Son Ltd., 1937. *Price* 10*s.* 6*d.*

This study, based on wide reading of the available literature and on personal knowledge of the country, is intended to help those who wish to understand the questions at issue in the controversy over the South African Protectorates, in so far as it concerns Swaziland. It is not, however, a political pamphlet, and the author is careful to avoid expressing personal views except to stress the urgency of the problem from the point of view of the Protectorate. She set out to provide the geographical background to the question. This in itself is valuable since there is no real geographical literature on the subject, and much of this study is, therefore, pioneer work. The photographs and maps, many of which are the author's own work, provide information of general use, while the extensive bibliography shows how wide a field Miss Doveton had to cover in her search for material.

The first part of the monograph gives a summary account of the physical geography, quite adequate to the main purpose of study, while the remainder discusses the people of the country and the way in which they have used or are using the natural resources. The Institute of British Geographers, which undertook the publication of this piece of research, will be well satisfied with the reception which it has already met with in South Africa, and geographers in general will be grateful to Miss Doveton for successfully accomplishing her purpose—to " fill a gap in geographical literature."

GENERAL

A Hand Through Time. By Dr. Edward Greenly. London : Thomas Murby and Co., 1938. *Price* 18*s.*

Dr. Greenly's book is a biography of his wife, and an autobiography, with details of his life's work on the geological survey of Anglesey, together with reminiscences of the various distinguished geologists with whom he was brought in contact.

Mrs. Greenly must have been a woman of remarkable character ; and if anyone wishes to read a love story in real life, they may do so here. She died in 1927 ; it was the breaking of an ideal union, and one can only feel sympathy with Dr. Greenly in so great a loss. Evidently he keeps continuous diaries, from which he publishes much which other men would have forgotten, or hestitated to print.

The book concludes with several chapters on immortality, which may be described as the autobiography of the evolution of Dr. Greenly's mind. Many of us may have difficulty in following him here, where his dreams and night-

mares are considered to be " appearances." If Dr. Greenly had said simply that the spirit of his wife was continually with him, influencing all his thoughts and actions, it would have been a statement of fact to which no one could have taken exception. A. G. S.

Limits of Land Settlement. Edited by Isaiah Bowman. New York : The Council of Foreign Relations ; distributed in this country by the Royal Institute of International Affairs, Chatham House, 1937. *Price* 15*s.*

This book has an attractive exterior but it is not easy to appreciate what precisely is the purpose it is intended to fulfil. As a work of reference it has some value, though it adds little to what has already been said in *The Pioneer Fringe* and *Pioneer Settlement.* As a general synthesis of world migration it suffers from the usual defects of a work that is not the product of a single master mind.

Perhaps it should be read backwards : beginning with Dr. Bowman's statement of principles, we should conclude, if we must, with Professor Sauer's geographical Panglossism. Dr. Bowman insists that " colonists have always had to be aided " (p. 293), but he omits to say that assistance has often taken the form of a firm impulsion from behind. We may well agree that " no discernible or predictable stream of migration can keep pace with the birth-rates of conspicuously over-crowded countries " (p. 1), but it by no means follows that " Europe is perhaps of all parts of the world the best suited to support a larger population " (Professor Sauer, p. 24). The fact is that migration is as much a social as an economic or geographical phenomena, and the European ferment shows no signs of abating vigour.

Three major points are suggested, negatively rather than positively, in the course of the book. (1) The mass migration to the United States in the last century must be regarded as a unique event unlikely of profitable repetition. In regard to climate, resources and accessibility, America stood quite alone among the undeveloped lands of the world. Dr. Mackintosh makes a similar suggestion regarding pre-War immigration into Canada (p. 61), but it was in the States that Nature's bounty was almost past human comprehension. (2) Realising this, we will the more readily appreciate the fact that migration almost inevitably entails initial economic loss. Assessment upon purely economic grounds can never be more than provisional. The lure of gold, a potent impulse, is not weakened because we can demonstrate by cold logic that the losses of the many far outweigh the profits of the few. When the dynamic force is social or political oppression, the laws of economics clearly just do not apply. Who shall say that a large-scale migration of Britons from a Europe made intolerable by Totalitarianism and Air Power is entirely beyond the bounds of probability ? (3) There is much emphasis to-day upon planning, but history shows Action ahead of Plan in nine cases out of ten, and where survey precedes action it is almost inevitably conservative. The planned settlement of Japanese in Brazil may be quoted as models, but they are as yet far too recent to have developed unplanned results. In making guarded estimates of the possibilities of plateau Africa we would do well to remember the " Great American Desert." This was no myth, it was sober judgement based upon existing knowledge with all its limitations. Foresight is an attribute not common even among scientists, and, though the geographer may confront the booster or the visionary with a cold recital of limited material resources, he will place himself in a false position if he forgets that lands are what they are largely because of their attachments. It will long remain extremely difficult to judge how far the " geography " of a country will be changed by the arrival in it of newcomers and the opening of the trail which they have blazed. P. R. C.

EDUCATIONAL

Primitive Races of To-day. By J. W. Page. London : George G. Harrap and Co. Ltd., 1938. *Price* 8*s.* 6*d.*—This book is a useful contribution to the

literature of human geography. It contains an account of primitive peoples with varying modes of life in many parts of the world. The geographical environment of each people is described and its influence on their life discussed. The subject-matter will be of interest to the general reader and to the geography master, but there is nothing new for the advanced specialist. The author's choice of maps to illustrate the text is not always a happy one. For instance, on a distribution map of the equatorial forests, the shading is continuous from the Amazon valley across the Peruvian Andes to the Pacific coast of South America. After reading the book one may well ponder old problems. What is to be the criterion of "backward" and "advanced" cultures? The Australian aborigines are backward materially, but they have an elaborate system of social relationships and magico-religious ideas and ceremonies. There is a very real danger of over-simplification along deterministic lines. Man is more than a part of the earth. A harsh environment may make material advance difficult, but it does not necessarily retard the development of complex social and religious thought and practice. J. S. H.

(1) *Beyond the Sunset.* (2) *West of the Moon.* By Elspeth J. Boog Watson and J. Isabel Carruthers. London: Oxford University Press. 1937 (reprinted) and 1938. *Prices 2s. 3d. and 2s. 6d. respectively.*—Each of these books contains the stories in brief of nearly thirty explorers, grouped more or less according to continents. The authors have happily escaped being condescending (intelligent children are usually so wise as to resent spoon-feeding), and their style makes the stories eminently suited for reading aloud. To young children they will be sagas and fairy-tales; modern and strikingly well-chosen illustrations will bring home to older girls and boys the fact that they are true; but only adults will realise just how true in detail painstaking research has made them.

The only criticism of two books admirably suited to illuminate the rather de-humanised course in geography is that the mortality rate is monotonously low. (This is less applicable to the first, which contains Magellan, Hudson and Franklin, Livingstone, Scott and Amundsen, and the Everest Expedition of 1924.) Children *like* to be told ". . . and they never came back any more."

Harrap's Geography Picture Summaries. Sets XV and XVI, *Latin America.* Selected and edited by S. J. B. Whybrow and H. E. Edwards. London: George G. Harrap and Co. Ltd., 1938. *Price 1s. 4d. each set.*—Thirty-two loose sheets bearing each two reproductions of photographs (4″×6″) suitable for the standard epidiascope or to be passed round in class. Each set is contained in a stout envelope. Should usefully supplement school equipment where the price of heavily illustrated text-books cannot be met by every pupil.

The Mediterranean Lands. By M. I. Newbigin. London: Christophers. Sixth Edition, 1938. *Price 5s. 6d.*—One of the few school texts dealing exclusively with the Mediterranean basin, this book has recently been revised and re-issued after having been out of print for some time. Miss Florence Newbigin, the author's sister, is responsible for the revision, and photographic illustrations have been incorporated. It is satisfactory to note that the publishers have found it possible to reduce the price from that at which it was originally published—*7s. 6d.*

NEW EDITIONS

Economic Geology. By H. Ries. New York: John Wiley and Sons Inc. London: Chapman and Hall Ltd. Seventh Edition, 1937. *Price 25s.*—Professor Ries' text-book has been so long known to students and teachers of geology that more than brief comment on the issue of its seventh edition would be superfluous. The book has largely been re-written, and its statistical information brought up to date. For students of this branch of geology the author has provided a most useful text-book, while all interested in the mineral resources

of the North American continent will find it an admirable guide. The full bibliography adds appreciably to the usefulness of the book. T. F.

Hints to Travellers. Vol. II. Edited by the Secretary of the Royal Geographical Society. London : Royal Geographical Society. Eleventh Edition, 1938. *Price* 14*s.*—This is the *vade mecum* of the explorer and traveller. The best evidence of its value lies in the number of editions issued. Beginning with the issue of a small pamphlet in 1854 it developed into two volumes, and forms the most valuable of handbooks on the subject. The present edition is largely re-written from fresh material obtained from recent explorers and travellers. The early chapters embody the experience of travellers in every part of the world in connection with such matters as food and drink, clothing, sledging, dog-driving, camels, caravans, motoring in the desert, camp equipment, and the kind of sleeping-bag for different climates. The present writer found the reindeer bag best suited for the Arctic, and Shackleton found the same when his ship sank in the Antarctic and its company had to live for some time on an icefloe. The last six chapters deal with the requirements of the scientist : *e.g.* how to take and record meteorological observations, the distribution and character of vegetation, geological characteristics—outfit required for the collection of specimens, minerals and precious metals, and geological mapping—anthropology, natural history and antiquities. A chapter on health and disease with useful instructions on how to deal with injuries is included. The volume of 472 pages is a convenient pocket size and contains illustrations of tents, meteorological and geological diagrams. J. M.

Don Gypsy. By Walter Starkie. London : John Murray, First Cheap Edition, 1938. *Price* 6*s.*

In Search of the Mahatmas of Tibet. By E. G. Schary. London : The Travel Book Club. First Cheap Edition, 1938. *Price* 3*s.* 6*d.*

The Editors have received for review the October issue of *Discovery*, a popular journal of the advance of knowledge recently revived under the auspices of the Cambridge Press. Of geographical interest in this issue are an article by Erling Christophersen, on " The Norwegian Scientific Expedition to Tristan da Cunha," and a note on the contemporary Ellsworth Expedition to the South Pole. In competition with all the Sciences, geography can expect a small measure of attention only, but we hope that the geographical interest will be sustained in future issues.

ANNUAL BUSINESS MEETING

The Annual Business Meeting was held in the Society's Rooms in Edinburgh on November 2nd, prior to the Lecture by Mr. J. W. Herries on "Modern Egypt," Professor James Ritchie, D.Sc., F.R.S.E., Chairman of Council, presiding.

The Report of Council (see page 380) for the session 1937-1938 was submitted to the meeting, and on the motion of Mr. David Kerr, seconded by Mr. D. G. Smith, was unanimously adopted.

The Financial Statement (see page 378) was submitted by Mr. William Williamson, Honorary Treasurer, and the adoption was moved by Miss A. B. Lennie and seconded by Mr. Maxwell Davidson.

The list of nominations of Office-Bearers recommended by the Council was then read as follows :—

That the Right Hon. Earl of Rosebery, D.S.O., be elected President in place of the Right Hon. Lord Polwarth, C.B.E., V.D., D.L., who retires.

That the Right Hon. Lord Polwarth, C.B.E., V.D., D.L., be elected a Vice-President.

That the following Vice-Presidents be elected to serve on the Council during Session 1938-1939 : Principal J. Cameron Smail, O.B.E., F.R.S.E. ; H. R. G. Inglis, F.R.S.G.S. ; Miss Ella Christie, F.R.S.G.S. ; Robert Grant, F.R.S.E. ; Right Hon. Lord Salvesen, P.C., LL.D. ; and Sir Robert Greig, LL.D., F.R.S.E.

That the following Members of the Society be elected to fill the vacancies existing : David Linton, B.Sc. ; James Hossack, M.A., B.Com. ; Erik Schacke ; J. Macqueen Cowan, M.A., F.R.S.E. ; W. O. Leitch ; A. W. Russell, W.S. ; Murray Macgregor, M.A., D.Sc. ; J. Finlay Stewart, F.R.S.G.S. ; George Graham Brown, F.R.S.G.S. ; A. H. R. Goldie, M.A., F.R.S.E. ; John Maclaren, M.B., C.M. ; Alexander Stevens, M.A., B.Sc. For Glasgow—George Ballantine ; James Murray. For Dundee—F. D. J. Buist ; J. Hubert Low ; D. D. Taylor.

That the following be Chairmen of the Centres : Glasgow—William Clarke Reid ; Vice-Chairman, Norman A. Millar. Dundee—Athole F. Stewart. Aberdeen—Sir Henry Alexander, J.P.

That the other honorary Office-Bearers who have not resigned be re-elected.

It was also resolved to nominate A. W. Robertson Durham, C.A., Auditor, for re-appointment.

On the motion of the Chairman the nominations were unanimously approved.

The Chairman took the opportunity of thanking the retiring President, Lord Polwarth, who for four years had worked assiduously for the Society, and the following Members of Council who had also completed their term of office : Mr. George R. Donald, Chairman of the Dundee Centre ; Mr. G. Erskine Jackson ; the Hon. Lord Ormidale ; Dr. Arthur Geddes ; Mr. Stanley C. Farrar ; Mr. A. G. Stenhouse ; Mr. D. Alan Stevenson ; Mr. James Munnoch ; Mr. W. P. Livingstone ; Colonel D. A. Tyrie, Dundee ; Mr. C. H. Marshall, Dundee ; and Mr. John G. Dow, Glasgow.

ROYAL SCOTTISH GEOGRAPHICAL SOCIETY

REVENUE AND EXPENDITURE ACCOUNT

For Year to 30th September 1938

1936-1937.			
£1698	Subscriptions— Ordinary Members	£1699	5 0
9	*Less*—Paid in Advance, 1938-39	9	9 0
£1689		£1689	16 0
	Less Geographical Assoc. Subs.	30	6 0
		£1659	10 0
108	Associate Members	21	15 0
£1797		£1681	5 0
	Life Membership, Diploma, and Entrance Fees—		
37	Portion applicable to Revenue	46	18 5
200	Government Grant	200	0 0
35	Income Tax Recovered	37	11 10
107	Dividends and Interests	119	18 6
	"Early Maps of Scotland" Publication—		
10	Surplus	..	
	Donations	10	10 0
		£2096	3 9
	Excess of Expenditure over Revenue—		
360	For Year to 30th September 1938	38	16 9
£2549		£2135	0 6

1936-1937.				
	Magazine—Expenses of Publication, etc.—			
£477	Printing			£443 18 3
66	Illustrations			71 5 11
62	Wrappers, Miscellaneous, and Index			44 0 5
24	Maps			27 9 2
88	Postages			64 9 8½
£719				£651 3 5½
£136	*Less*—Magazines sold	£116 4 6		
57	Advertisement Receipts	34 16 8		
8	Index Sales	2 4 5		
£203		£153 5 7		
120	Estimated Value of Books Received	120 0 0	323	273 5 7
£396				£377 17 10½
	Rooms—Upkeep of—			
£209	Rent, Taxes, and Insurance	£207 10 0		
94	Cleaning and Repairs	81 9 9		
26	Heating and Lighting	25 11 4		
£331		£314 11 1		
19	*Less*—Rents received for hire of Rooms	68 10 6	311	
£680				246 0 7
143	Lectures	£393 13 11		
	Less—Received for Tickets sold	72 13 6	537	
				321 0 5
229	Library—Books and other Furnishings, including estimated value of Books received			179 15 0½
71	General Printing			98 8 1
33	Stationery			26 1 4
30	Telephone—Rent, Calls, and Telegraphic Address			22 16 8
3	Addressograph			2 16 8
6	Medals			10 0 0
39	Postages			35 10 3½
49	Miscellaneous			37 7 11½
100	Superannuation Contribution			24 2 0
£701	Salaries and Honoraria	£704 0 10		
31	Treasurer	31 10 0		
5	Auditor's Fee	5 5 0	738	
	Donations			740 15 10
	"Early Maps of Scotland" Publication—Deficit			7 2 0
	Bank Overdraft Interest			0 12 6
				4 13 3
£2549				£2135 0 6

BALANCE SHEET as at 30th September 1938

ASSETS

I. Investments held by the Society—

Life Membership, Diploma and Entrance Fees Fund—

£512, 6s. 11d. 3½% Conversion Stock	£400 0 0

LIABILITIES

I. Commercial Bank of Scotland	£460 10 5
II. Accounts Outstanding	52 14 10
III. Prepaid Subscriptions	9 9 0
IV. Dr. M. I. Newbigin Memorial Fund—	

General Funds—			
£400 Dominion of Canada 3½% Registered Stock, 1930-50	£405 1 0		
£2051, 3s. 3½% Conversion Stock	1484 14 6		
Dr. J. G. Bartholomew Memorial Donation—			
£890 Guaranteed 2¾% Land Stock	500 13		
Dr. J. G. Bartholomew Bequest—			
£500 3½% Conversion Stock	500 0 0		2890 9 0
		£3590 9 0	
II. Glasgow Equipment Fund—			
Balance at 30th September 1938, on Deposit		76 5 11	
III. "Early Maps of Scotland" Publication—			
Stock on Hand		79 6 6	
IV. Cash Balance		22 1 10	
		£3768 3 3	

(a) Life Membership, Diploma, and Entrance Fees Fund—			
Diploma Fees—Balance at 1st October 1937		£46 8 0	
Entrance Fees— Do.		226 9 10	
Life Membership Fees— Do.		442 4 0	
		£715 1 10	
Add—Sums received during Year		223 6 0	
		£938 7 10	
Less—5% whereof transferred to Revenue		46 18 5	
Balance at 30th September 1938		£891 9 5	
(b) Glasgow Equipment Fund—			
Balance at 1st October 1937	£75 11 1		
Interest for Year	0 14 10		
		76 5 11	
(c) General Account—			
Balance at Credit at 30th Sept. 1937	£1706 10 5		
Proceeds of £500 3½% Conversion Stock disposed of and donation of £105	605 0 0		
	£2311 10 5		
Less—Excess of Expenditure	38 16 9		
		2272 13 8	3240 9 0
			£3768 3 3

LIVINGSTONE MEDAL FUND

Funds at 30th September 1937—			
£978, 13s. 11d. 3½% Conversion Stock		£771 7 5	
Deposit Receipt, Commercial Bank of Scotland Limited		229 17 3	
Commercial Bank of Scotland Limited, on Current Account		0 10 7	
		£1001 15 3	
Income Received—			
Interest on Government Stock (*less* tax, £9, 3s. 8d.)		27 11 5	
Interest on Deposit Receipt		0 15 10	
Income Tax Recovered		8 2 8	
		£1038 5 2	

Funds at 30th September 1938—		
£1121, 18s. 4d. 3½% Conversion Stock		£921 7 5
Deposit Receipt, Commercial Bank of Scotland Limited		101 0 0
On Current Account with Commercial Bank of Scotland Limited		15 17 9
		£1038 5 2

DR. M. I. NEWBIGIN MEMORIAL

Funds at 30th September 1937—			
£312, 10s. 2¾% Guaranteed Irish Land Stock		£249 17 4	
Due by General Fund		5 0 0	
		£254 17 4	
Income Received—			
Interest on Guaranteed Stock (*less* tax, £2, 5s.)		6 6 10	
		£261 4 2	

Funds at 30th September 1938—		
£312, 10s. 2¾% Guaranteed Irish Land Stock		£249 17 4
Due by General Fund		5 0 0
Do. Commercial Bank of Scotland on Deposit Receipt		6 6 10
		£261 4 2

Edinburgh, 21st October 1938.—I have examined the Accounts of the Royal Scottish Geographical Society for the year ended 30th September 1938, of which the above is an Abstract, and compared them with the Vouchers and Instructions thereof, and I find the whole to be correctly stated and sufficiently vouched and instructed.

A. W. ROBERTSON DURHAM, C.A.

ROYAL SCOTTISH GEOGRAPHICAL SOCIETY

REPORT OF COUNCIL

Fifty-fourth Session, 1937-1938

(1st October 1937 to 30th September 1938)

The Council submits the following Report :—

Ordinary Membership

The changes during the session in the members were as follows :—

On 1st October 1937		1556
New Members (transfers from Associate Membership—67)		142
		1698
Deduct by Death	57	
„ Resignation or lapsed	142	
	199	
On the Roll on 30th September 1938		1499

This is divided into Edinburgh 889, Glasgow 350, Dundee 72, and Aberdeen 86. In addition, 73 reside in England and 29 abroad. The Life Members, 139, are included in the numbers above.

Teacher Associate Members

On 1st October 1937	144	
Deduct by transfers to Ordinary Membership	67	
„ „ „ Student Membership	42	
„ resignation or lapsed	35	
	144	

This branch of Membership is now cancelled.

Student Membership

Transferred from Teacher Associate Membership	42	
New Members	10	
	52	
Deduct by Resignation	2	
		50

Honorary and Corresponding Members and Honorary Fellows

Honorary Members	4	
Honorary Fellows	4	
Corresponding Members	6	
		14
Total Membership		1563

78 Members who have been granted the Diploma of Fellowship are included among the Ordinary Members.

Diploma of Fellowship

The Diploma of Fellowship was conferred on the following Members :— Mr. W. Nicholson, Isle of Jura, in recognition of his work in Central China ; Mr. William Mair, F.C.S., F.R.G.S., Edinburgh, for his work in connection with Mountain Panoramas and Indicators ; Miss M. T. Calder, M.A., B.Sc., Teacher of Geography in the High School for Girls, Glasgow.

The Society's Medals

The following awards were made during the session :—

Scottish Universities Medal :—

Aberdeen University.—Margaret J. Winton, first place Ordinary Class, 1937-38.

Edinburgh University.—John B. Fleming, for a Geographical Essay, Intermediate Honours Class in Geography, 1938.

Glasgow University.—Andrew Wallace, first place in the Ordinary Graduating Class of Geography.

Meetings of the Society

Twenty-two ordinary meetings were held : six in Edinburgh, six in Glasgow, five in Aberdeen, and five in Dundee.

These meetings were addressed by Rev. Hamilton Aikin, " Malay Life and Scenes " ; Prof. T. Graham Brown, " The Ascent of Nanda Devi " ; Major C. S. Jarvis, " The Sinai Peninsula and its Arabs " ; Dr. A. M. Renwick, " Wanderings in the Peruvian Andes : Glimpses of Inca and Pre-Inca Civilisation " ; Prof. Walter Starkie, " The Spanish People " ; Mr. D. Alan Stevenson, " Present-day Portugal."

The afternoon meetings in Edinburgh were addressed by Mrs. C. Z. Bain, " The Keeling-Cocos Islands " ; Miss Helen M. Boulnois, " A South African Orange Homestead (Empire Openings) " ; Dr. David Clouston, " Rural India : with special reference to the Central Provinces and Berat " ; Miss F. S. Copeland, " Yugoslavia " ; Sir Robert Greig, " Fleeting Impressions of the Sudan " ; Mr. A. G. MacGregor, " Volcanoes of Martinique and Montserrat, " West Indies " ; Mr. R. T. Skinner, " R. L. S. in the Cévennes " ; Mr. John F. Stewart, " Lithuania, Memel and Vilna " ; Sir Harold J. Stiles, " A Tour with a Camera to the Rhine, Danube, Austria, and the Black Forest " ; Dr. Fred. Walker, " The Island of St. Vincent " ; Mr. Charles B. Boog Watson, " How Edinburgh Grew " ; Mr. G. V. Wilson, " The Scenery and Geology of Orkney."

A special joint meeting with the Edinburgh University Geography Department and the Geographical Association was held in the University on Tuesday, 7th June, when Dr. C. Forrester—Government of India School of Mines—showed Ciné pictures of India.

The Library and Map Department

During the session 6753 volumes were borrowed by members of the Society. This number included 191 volumes borrowed from the Glasgow Branch Library.

In addition, 124 volumes were lent out under the arrangement with the Carnegie (U.K.) Trust Library Scheme.

Presentations to the Society include a portrait of Lord Elphinstone, presented by his Lordship for the Society's collection of past Presidents ; a signed photograph of Captain Amundsen at the South Pole, presented by Mr. G. W. Rice ; 250 volumes and 130 Map Sheets, presented by Miss A. L. Watson from the estate of Dr. A. M. Watson.

To the Society's valuable collection of Early Maps of Scotland have been added Ainslie's Map of the Country round Edinburgh, 1779, presented by Mrs. Catherine Maxwell ; a photostat print of a map of Ayr, 1750, presented by Mr. H. R. G. Inglis ; and also a photostat copy of a Plan of the Burgh Roods of Inverkeithing, 1861, presented by Dr. James Watt.

During the session the following additions to the Library have been made :— 770 volumes, 48 pamphlets, 72 reports, 391 map sheets, and 73 charts. Of the number of books added, 326 were received from publishers for review purposes, 444 volumes being presented and 23 purchased.

The Council desires to record its thanks to the Dominion, Colonial, and Foreign Governments for official publications presented to the Library, and to extend the same to the Directors of The Ordnance Survey and Geological Survey of Scotland ; the Geographical Section, General Staff, War Office ; The War Office Disposal Board ; The Survey of India ; The Topographical Survey of Canada ; The Trustees of the British Museum ; The Admiralty ; The Survey Department, Federated Malay States ; The Geodetic Institute, Copenhagen ; and The United States Geological Survey.

The Council thanks the undermentioned private donors of books, maps, and other presentations :—Miss Aird ; Miss I. Alexander ; Mr. J. Bartholomew ; Miss Ella Christie ; Mr. D. Colville ; Dr. E. Wyllie Fenton ; Dr. Douglas Guthrie ; Mr. David Haldane ; Mr. J. Gall Inglis ; Mr. William Mair ; Mr. John Mathieson ; Mrs. H. Maxwell ; Rev. James Meikle ; Mr. D. G. Moir ; Mr. J. W. Moir ; Mr. T. M. Munro ; Mr. J. Mowat ; Sir George Macdonald ; Mr. L. McInnes ; Mr. A. A. Pinkerton ; Dr. D. T. Robertson ; Dr. J. Cairns Russell ; Mr. Erik Schacke ; Miss Sheppard ; Mr. R. T. Skinner ; Col. Stephen Smith ; Mr. D. Alan Stevenson ; Mr. C. B. Boog Watson ; Dr. James Watt ; Mr. William Williamson.

The Scottish Geographical Magazine

The Council desires to acknowledge its indebtedness to all those authors by whose contributions the bi-monthly publication of the *Magazine* has been made possible throughout the year. Of these, it is gratifying to notice that nearly one-third are resident overseas, and one-third are men who have and have had no connection with the educational side of our subject whatsoever. The proportion of articles with a local Scottish application—also one-third—has if anything risen.

It is with pleasure also that the Council takes this opportunity gratefully to acknowledge assistance received, either with regard to the reviewing of books or in the matter of advice previous to the publication of papers, from : Mr. J. Aitkin ; Mr. W. R. Auld ; Mr. J. N. L. Baker ; Dr. G. B. Barbour ; Dr. J. H. Birrell ; Dr. A. Bremner ; Mr. G. Graham Brown ; Professor R. N. Rudmose Brown ; Mr. J. Walter Buchan ; Captain D. B.

Calderwood ; Mr. W. L. Calderwood ; Dr. R. Campbell ; Miss J. I. Carruthers ; Miss Ella Christie ; Mr. P. R. Crowe ; Dr. R. E. Dickinson ; Mr. G. S. Dickson ; Mr. W. G. East ; Mr. S. C. Farrar ; Dr. E. Wyllie Fenton ; Dr. T. M. Finlay ; Mr. T. W. Freeman ; Miss A. Garnett ; Dr. A. Geddes ; Mr. J. Gilbert ; Mr. A. P. Gray ; Mr. J. Grieve ; Mr. P. H. Grimshaw ; Dr. J. Gunn ; Dr. D. Guthrie ; Mr. J. B. Hamilton ; Mr. A. Harrison ; Dr. H. C. K. Henderson ; Mr. J. S. Hobbs ; Miss H. C. Hog ; Miss I. W. Hutchison ; Mr. J. C. James ; Major C. S. Jarvis ; Professor Ll. Rodwell Jones ; Mr. A. E. Kennedy ; Miss A. M. C. Latham ; Mr. W. O. Leitch ; Mr. H. B. Linton ; Mr. W. P. Livingstone ; Mr. W. H. Marwick ; Mr. C. Matheson ; Mr. J. Mathieson ; Mr. A. E. Maylard ; Mr. A. A. Miller ; Mr. J. D. Munro ; Dr. A. Macdonald ; Mr. J. Y. Macdonald ; Mr. J. McFarlane ; Dr. I. M. McGillivray ; Mr. L. Mackinnon ; Miss M. E. Newbigin ; Professor A. G. Ogilvie ; the Rev. J. Reid ; Mr. T. Ripley ; Miss H. Roberts ; Mr. D. Ross ; Mr. A. G. Stenhouse ; Mr. A. Stevens ; Mr. J. F. Stewart ; Mr. C. B. Boog Watson ; Mr. J. Adam Watson ; and Miss D. Yates.

Position of Geography in Schools

The Council, having appointed a special Committee to consider the position of Geography in secondary schools, is glad to be able to report that a certain measure of improvement has taken place by the recognition of Geography as a full subject in the Higher Leaving Certificate, although an approach to the Universities for similar recognition has not yet been successful.

Place-names of Scotland

The Council of this Society has, since its foundation, taken a deep interest in Scottish Place-names, and early this year the Council appointed a New Committee to deal with this important subject. The following counties are already under review : Aberdeen, Angus, Argyll, Clackmannan, Dunbarton, East Lothian, Midlothian, Fife and Kinross, Kincardine, Lanark, Peebles, Perth, Roxburgh, Selkirk and Sutherland. Berwick and West Lothian have been completed. The Committee will welcome assistance from all who are interested in the subject, and desires their attention drawn to incorrect forms found on maps, and the omission from maps of names of historical or antiquarian interest.

Representatives and Delegates 1937-38

International Geographical Congress (Amsterdam) *18th to 28th July* 1938.—Prof. A. G. Ogilvie ; Mr. J. Bartholomew.

International Anthropological Congress (Copenhagen), *August,* 1938.—Miss I. W. Hutchison and Mr. Robert Kerr.

Empire Development Conference (Glasgow), *July* 1938.—Mr. Wm. Clarke Reid ; Mr. J. O. M. Clark ; and Mr. J. W. Gourlay.

Association for the Preservation of Rural Scotland.—Mr. J. Bartholomew, Edinburgh,

the Society's representative on the Council ; Prof. A. G. Ogilvie, Edinburgh ; Mr. T. Miller, Glasgow ; and Col. D. A. Tyrie, Dundee.

British Association Meeting (Cambridge).—Miss L. R. Latham.

Bruce Memorial Prize Committee.—Prof. R. N. Rudmose Brown and Mr. W. G Burn Murdoch.

Carnegie United Kingdom Trust.—General Council, Central Library for Students —Mr. Robert R. Walls.

Joint University Committee of the Royal Anthropological Institute.—Mr. Robert Kerr.

Old Estate Plans Committee.—Mr.C. B.Boog Watson and Mr. Angus Macdonald.

Scottish National Memorial to David Livingstone Trust.—Prof. A. G. Ogilvie and Mr. W. Clarke Reid.

National Committee for Geography.—Prof. A. G. Ogilvie.

National Trust for Scotland.—Prof. A. G. Ogilvie.

Permanent Committee on Geographical Names.—Mr. J. Bartholomew.

" *The Scottish Archive* " *Council* (for the publication of a linguistic atlas of Scotland).—Prof. A. G. Ogilvie.

Bequests

The Council has received intimation of the following bequests :—the late Mr. J. Edward Touche, Edinburgh, £500 ; the late Mr. A. Geddes Scott, Edinburgh, £100 ; the late Mr. J. Bentley Philip, Aberdeen, £10.

Obituary

It is with deep regret that the Council has to record the loss to the Society of 57 members by death, among them Mr. J. Edward Touche, a Vice-President of the Society (see *S.G.M.*, vol. 54, p. 231) ; Dr. A. M. Watson (see *S.G.M.*, vol. 54, p. 231) ; Mr. A. P. Melville and Mr. J. Bentley Philip, past Members of Council ; Mr. A. Geddes Scott, one of the original members of the Society ; Lord Mackenzie, and Sir J. A. Roxburgh.